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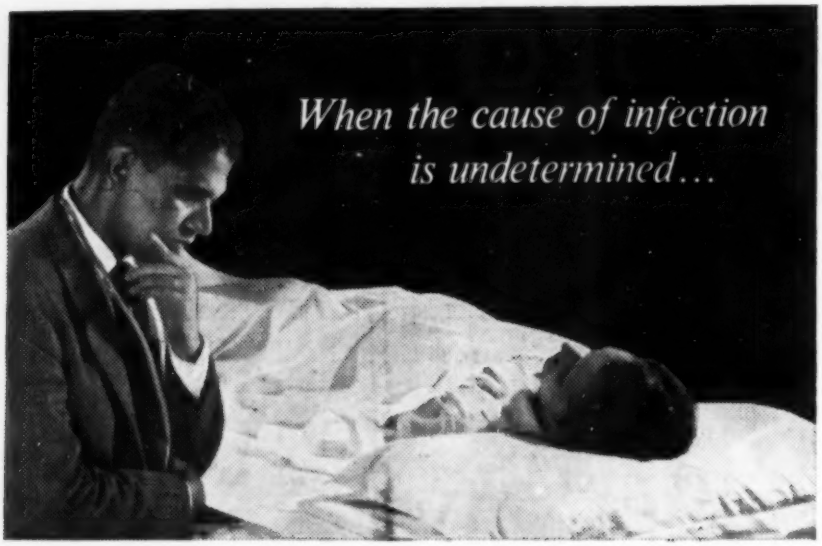

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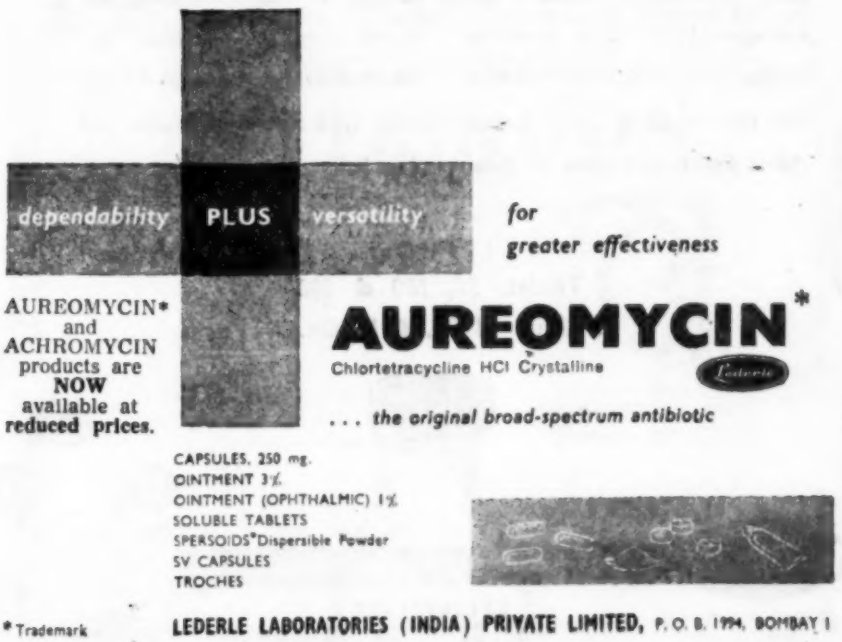

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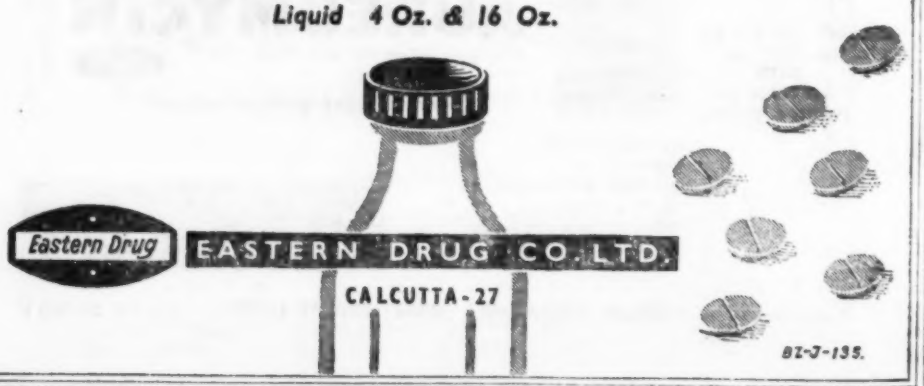

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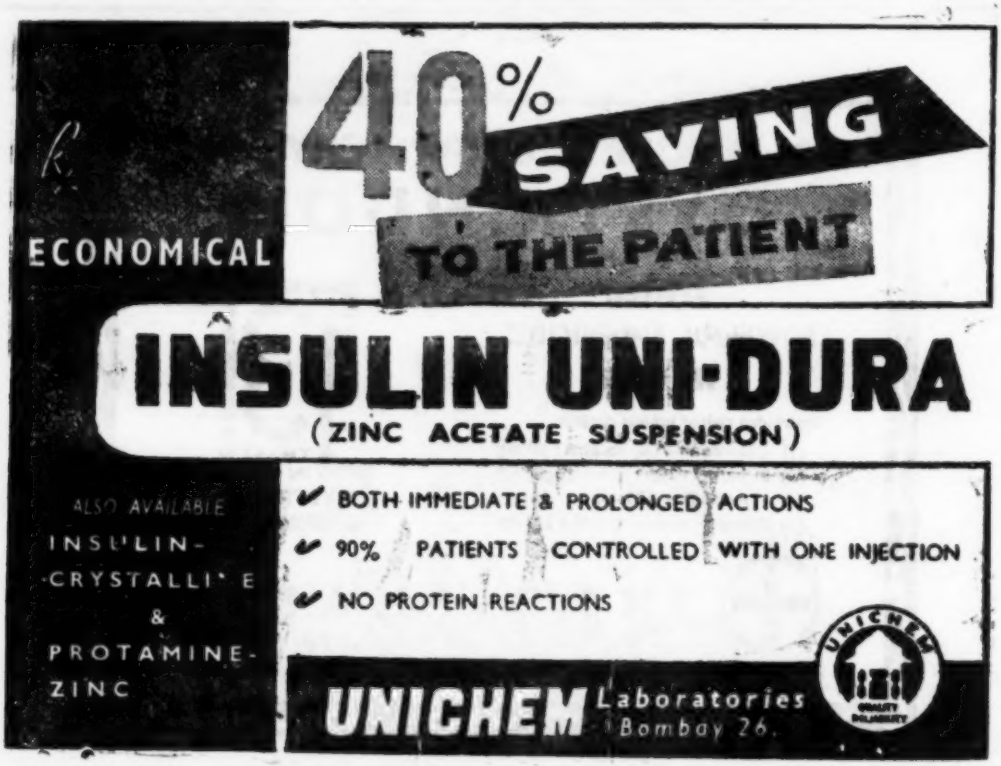
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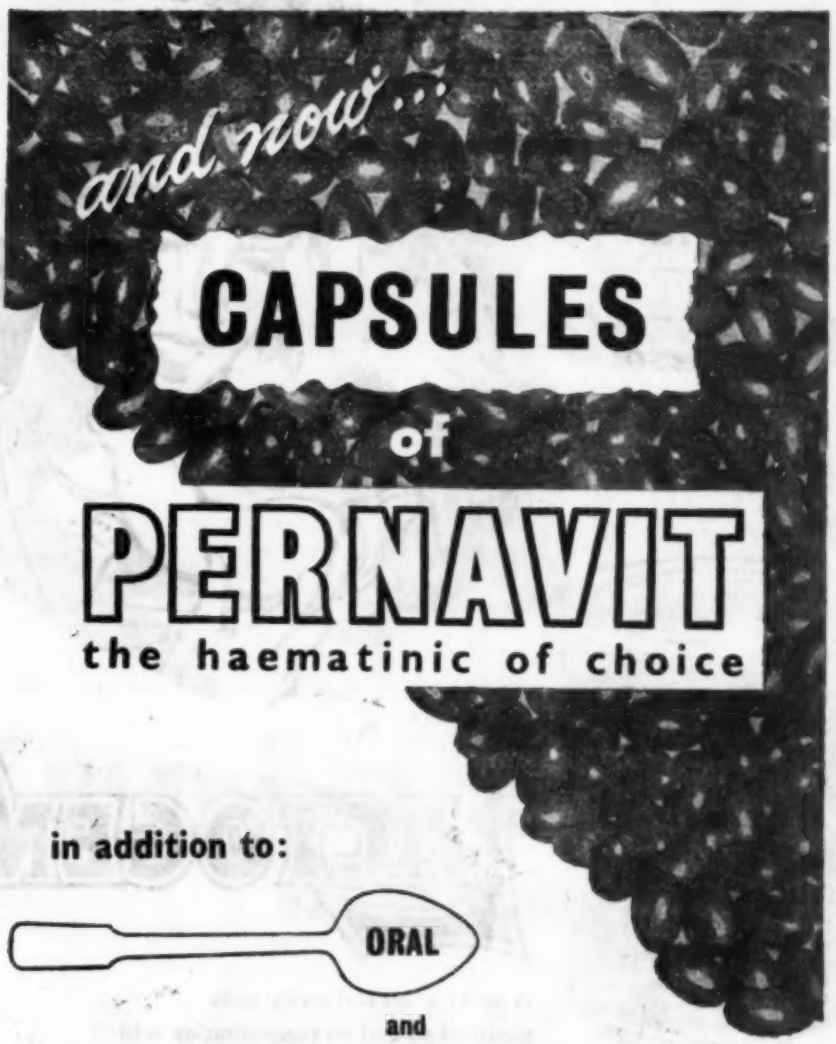

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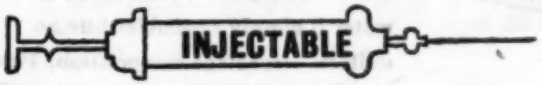

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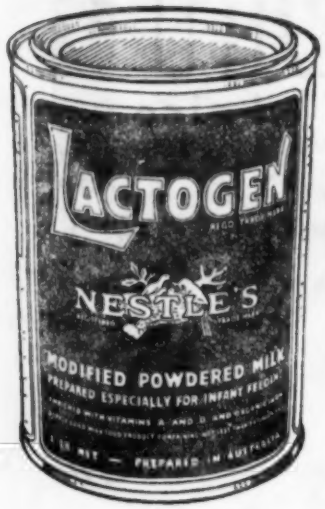

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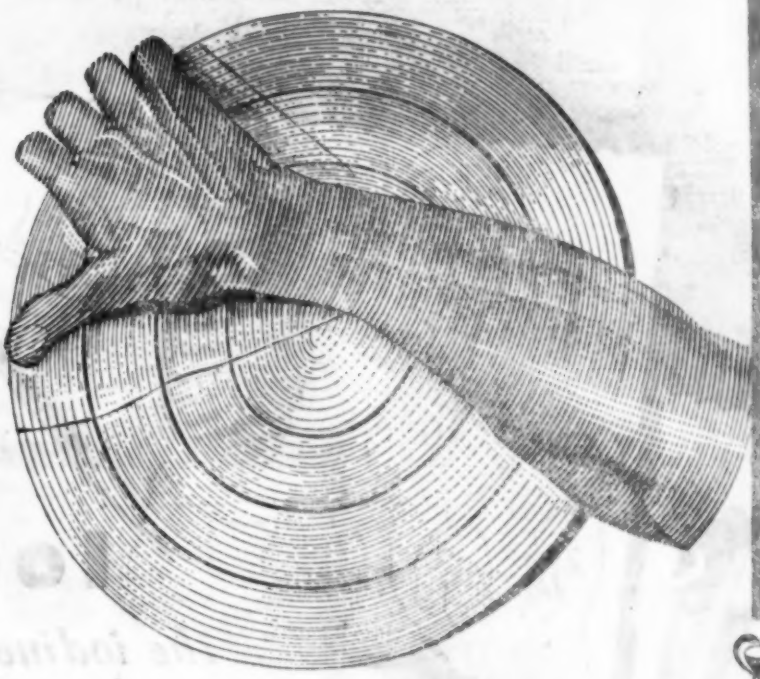

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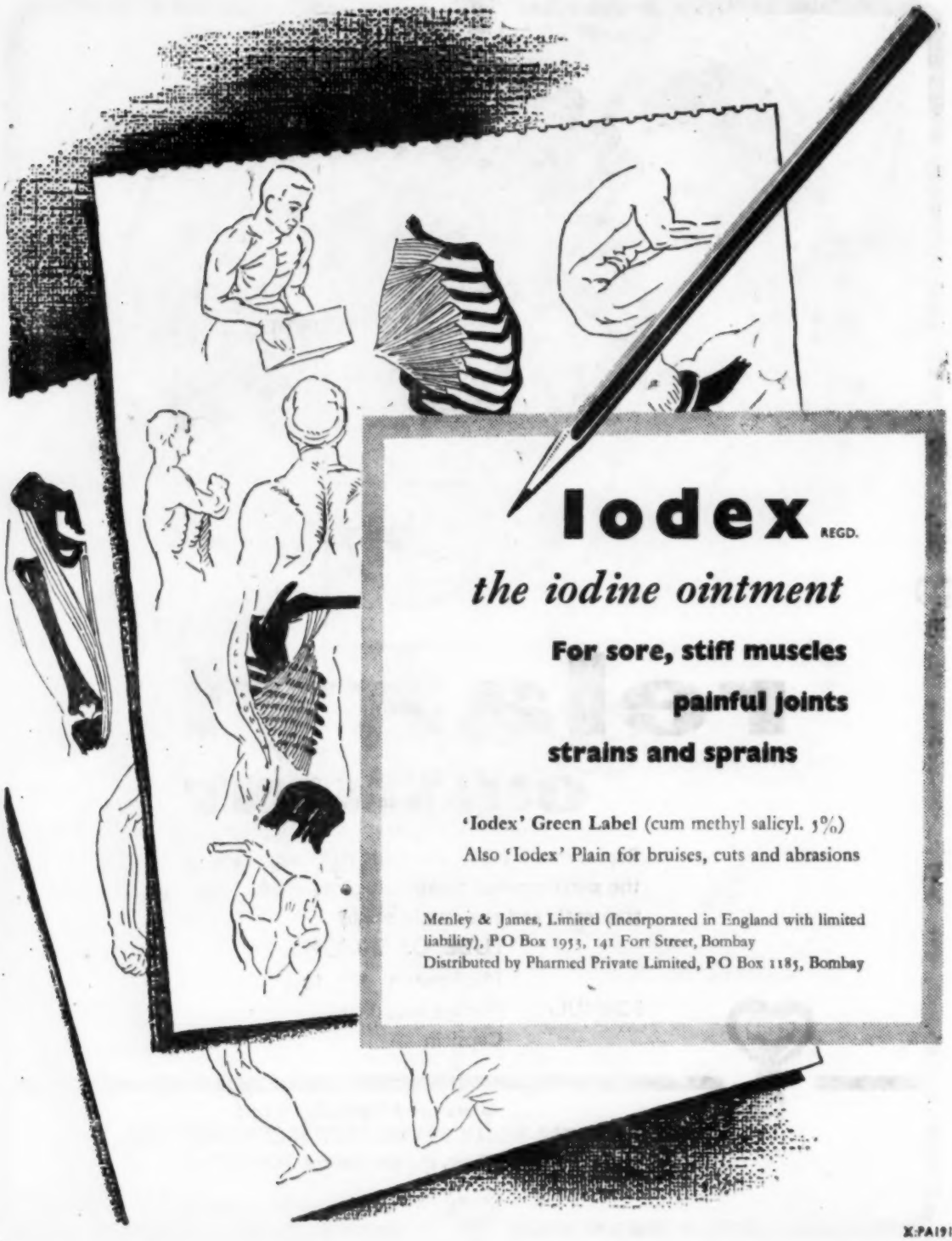
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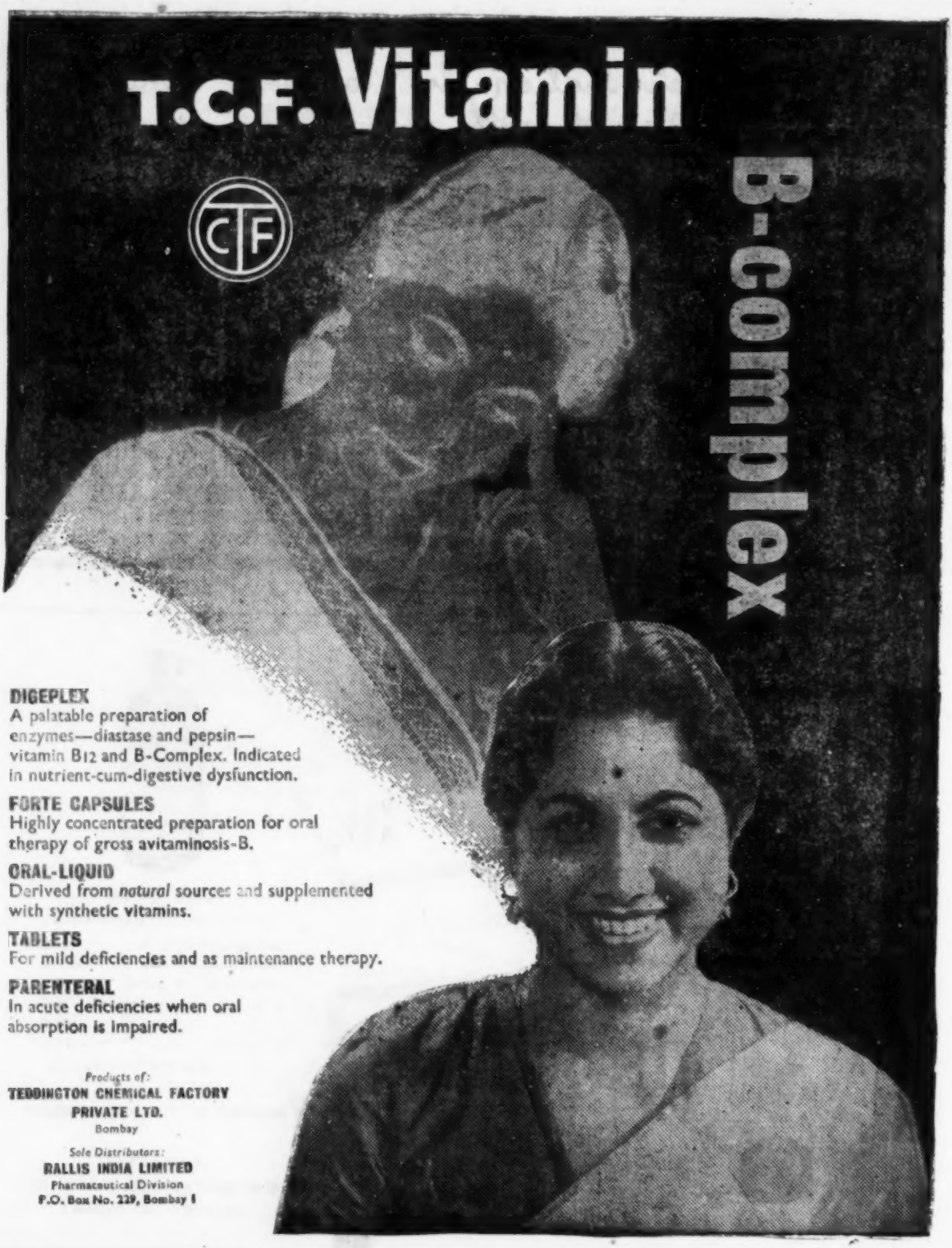

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Shaffer (1) would consider the diet satisfactorily balanced when the calories are derived approximately as follows:

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According to Hansen (2), fats are important as a concentrated energy reserve, physical protection for blood vessels, nerves and organs; as insulation against changes in temperature; as a vehicle for absorbing vitamins (A, D, E and K). Fats also stimulate appetite, aid satiety by delaying the emptying time of the stomach and spare protein.

Among poor class children, especially in South India, dry and rough skin is common. The condition is usually attributed to vitamin A deficiency; but the observations of Menon, Tulpule and Patwardhan (3) suggest that dietary deficiency of fat may have something to do with this abnormality.

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(1) Shaffer, Thomas E.—Nelson's Text-book of Pediatrics—Sixth Edn. Dec. 1954—p. 131-32
(2) Hansen, Arild E.—Nelson's Text-book of Pediatrics—Sixth Edn. Dec. 1954—p. 80
(3) Menon P.S., Tulpule P.G. and Patwardhan V.N.—Indian J. Med. Res. (1950) *38;* 173
(4) Deuel H.J.
(5) Nhavi N.G. and Patwardhan V.N.—Indian J. Med. Res. (1946) *34;* 49

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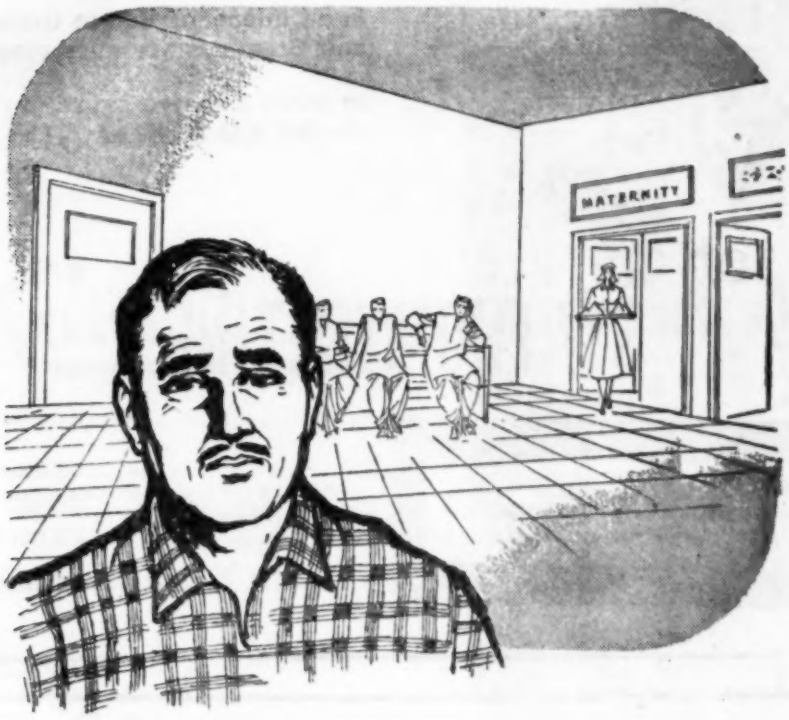

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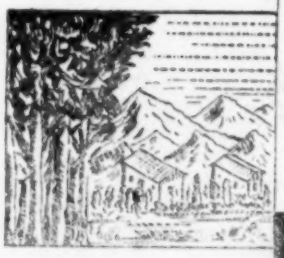

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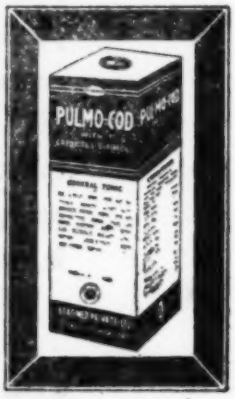

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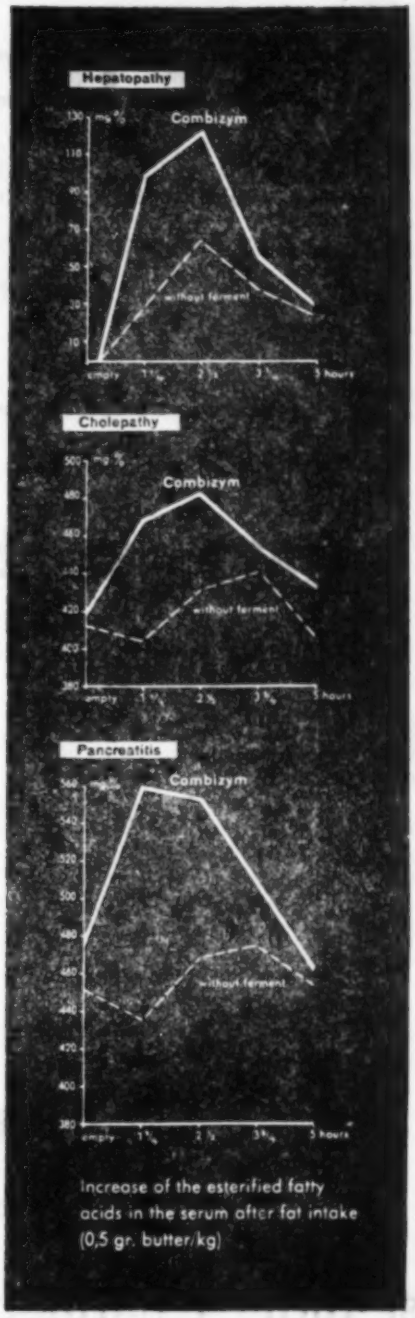

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J. B. CHATTERJEA, M.D. (CAL.)

AND

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In India hereditary haemolytic anaemia is not rare. The common example of this type of disorder appears to be haemoglobinopathy in some form or other. Thalassaemia either in homozygous form or in combination with abnormal haemoglobin D, E or S has been reported from various parts of India (Chatterjea *et al*, 1957 ; Shukla *et al*, 1958 ; Sukumaran and Sanghvi, 1958). Homozygous forms of haemoglobin S and E have also been reported (Chatterjea, 1957 ; Batabyal and Wilson, 1958 ; Shukla *et al*, 1958). Relevant literature on abnormal haemoglobins and haemoglobinopathy in India has recently been reviewed editorially (1958).

In contrast to the incidence of the haemoglobinopathic syndrome, hereditary spherocytosis is seen less frequently in India. In Indian literature, no authentic case of this disorder is recorded except the one from Calcutta (Chatterjea, 1956). In view of the paucity of records on this disease in India, it was thought worth while to record observations on 7 cases of hereditary spherocytosis investigated and followed up in the Haematology Department, School of Tropical Medicine, Calcutta.

Characteristic clinical features of the disease are varying degrees of chronic anaemia, jaundice and splenomegaly detected according to the severity of the disease at different periods of life. Diagnostic haematological stigmata are reticulocytosis, spherocytosis, and increased erythrocytic fragility. Evidence of a similar anomaly is seen in either parents, siblings or in other family members. At any time during the course of the disease, there may be a crisis (*crise de deglobulization*) characterised by an attack of sudden fever and rapid fall of red cell levels. The crisis may be aplastic due to acute erythroblastopenia (Owren, 1948) or haemolytic due to hypersplenic mechanism (Dameshek and Bloom, 1948). Cholelithiasis, chronic leg ulcer and skeletal changes may be associated in a varying proportion of cases.

Characteristic haematological feature is the presence of varying number of spherocytes in the peripheral blood. These spherocytes are unduly fragile and appear to be selectively 'trapped' and destroyed in splenic circulation. Spherocytes in the presence of spleen has a shortened life span, but in the absence of spleen, the spherocytes show a normal life span. It, therefore, appears that normal splenic circulatory system is not quite compatible with the hereditary spherocytes. This incompatibility is the cause of hyperhaemolysis and resultant anaemia. Splenectomy in this disorder halts hyperhaemolysis and anaemia though the spherocytes still persist. Splenectomy would thus effect a clinical cure though the basic haematologic lesion is not reversed.

The exact cause of spherocytosis is not precisely known. Recent work tends to indicate that there is, in hereditary spherocytosis, a defect in erythrocytic glycolytic system due perhaps to some enzymatic

defect (Prankerd *et al*, 1955 ; Motulsky *et al*, 1955). It has been suggested that haemoconcentration that occurs in sluggish splenic circulation would create conditions in which the glucose supply to the red cells is reduced, and the cells being incapable of normal glycolysis can no longer maintain their normal chemical stores of energy, so that haemolysis occurs (Prankard *et al, loc. cit.*). Continued presence of glucose during incubation has been shown to retard markedly the potassium loss and increase in osmotic fragility which accompany the increased rate of autohaemolysis of hereditary spherocytes (Selwyn and Dacie, 1954).

The disease is transmitted as a non-sexlinked dominant character. Thus it affects both sexes equally and only one parent usually shows the anomaly. Exceptions to this mode of transmission are seen and have been explained by a process of mutation (Young *et al*, 1951).

Materials and Methods

Seven patients were investigated. In addition to clinical and routine haematological studies, the following investigations were carried out :

(1) Mechanical fragility of red cells was estimated according to a slightly modified method of Shen, Castle and Fleming (1944).

(2) Osmotic fragility of red cells was estimated before and after incubation at 37°C for 24 hours.

(3) Autohaemolysis (haemolysis after incubation at 37°C for 24 and 48 hours) according to the method of Selwyn and Dacie (1954).

(4) Foetal haemoglobin by the alkali denaturation technique of Singer *et al* (1951).

(5) Plasma haemoglobin by the modified method of Bing and Baker (1931).

(6) Serum iron according to Powell's modification (1944) of Heilmeyer's method.

(7) Sickling test with 2 per cent solution of sodium metabisulphite (Daland and Castle, 1948).

(8) Coombs' tests both by direct and indirect methods to exclude the presence of any anti-red cell antibody. Cold and warm agglutinins were also tested for.

(9) Electrophoretic analysis of haemolysate with a LKB paper electrophoresis equipment using veronal buffer at pH 8·6 and ionic strength 0·05. The runs were usually conducted for 8 hours with a constant current of 0·5 milliampere per cm. applied at a voltage of 200-250 D.C.

Particular care was taken to search for the presence of any associated abnormality, congenital or acquired. Three cases with history of bleeding were specially investigated to assess their haemostatic function and status of coagulation factors, according to standard methods.

Available members in each family were examined for evidence of spherocytosis.

Observations

Clinical history (table 1) :

Ages of the patients varied from 2½ to 26 years ; all the patients were males ; six were Bengalees and one belonged to the Anglo-Indian community.

The onset of the symptoms was usually insidious. Symptomatology in general consisted of pallor, weakness, anaemia, jaundice and splenic enlargement, the degree and duration of each varying from case to case. The symptoms in an average case had usually appeared 1 to 5 years before they had come under our observation. Two patients (Nos. 1 and 7) had, during the period of observation, 3 to 4 attacks of irregular fever lasting for about a week each time. One patient (No. 3) was first diagnosed during an attack of 'crisis'. This patient, aged 16 years, had an associated defect of haemostatic mechanism compatible with the diagnosis of vascular pseudohaemophilia and has been reported previously as a case of 'Hereditary spherocytosis with pseudohaemophilia' (Chatterjea, 1956). Subsequent study indicated that this patient had also a deficiency of antihaemophilic globulin factor. Two patients (Nos. 4 and 5—brothers of No. 3) were diagnosed during family study ; their chief complaints were weakness and easy fatigability of 4 to 5 years' duration ; in addition they had attacks of epistaxis which was found to be due to vascular pseudohaemophilia.

Clinical data :

Jaundice of variable degree was present in all the cases excepting two (Nos. 3 and 6). Variable degree of splenomegaly (range : enlarged 2 to 10 cm. below the left costal margin) and hepatomegaly (range : enlarged 1·5 to 2·5 cm. below the right costal margin) was present in all the cases. None showed any significant enlargement of lymph nodes or evidence of leg ulcers. No significant abnormality was found in other systems.

Haematological data :

Haemoglobin varied from 5·8 to 12·76 g. per 100 ml. and the P.C.V. from 17·0 to 38·0 per cent.

TABLE 1—SHOWING DETAILS OF SEVEN PATIENTS WITH HEREDITARY SPHEROCYTOSIS

	Case 1 (C.D.)	Case 2 (P.R.C.)	Case 3 (P.B.M.)	Case 4 (S.M.)	Case 5 (S.B.M.)	Case 6 (D.B.)	Case 7 (L.B.)
Clinical details							
Age (years)	2½	16	16	21	26	4	7
Sex	Male	Male	Male	Male	Male	Male	Male
Symptoms	Occasional fever Anorexia	Weakness	Bleeding from gums Weakness	Easy fatigue Occasional epistaxis	Weakness Occasional epistaxis	Slow fever Occasional attacks of jaundice	Weakness Occasional fever
Signs							
Pallor	+	Slight	+	Slight	Slight	+	+
Jaundice	+	+	−	+	+	−	+
Liver enlargement (cm.)	1·5	1·5	2·5	2·5	1·5	2·5	2·5
Spleen enlargement (cm.)	2·5	10	5	5	2·5	4	5
Haematological details							
Hb. g. (%)	9·28	11·6	5·8	12·46	12·76	8·7	8·7
P.C.V. (%)	30·0	30·0	17·0	36·0	38·0	29·0	25·0
Reticulocyte (%) ...	19·0	5·0	25·0	2·8	2·5	16·2	14·0
M.C.V.	103·0	110·0	100·0	113·0	102·0	97·0	104·0
M.C.H.C.	30·0	38·0	34·0	34·0	33·0	30·0	34·0
W.B.C.	15300	8200	5400	6100	6000	6850	7500
Platelets	280,000	114,660	240,000	145,360	210,900	285,000	295,000
Spherocytes	+++	++	+	+	+	+++	++
Premature cells in peripheral blood	Normoblast C+ Neutrophilic myelocyte & metamyelocyte +	−	Normoblast C+ Neutrophilic myelocyte & metamyelocyte +	−	−	−	−
Osmotic fragility ...	0·64—0·36	0·64—0·36	0·64—0·32	0·56—0·36	0·52—0·32	0·68—0·36	0·72—0·36
Total plasma bilirubin mg. (%)	1·25	3·75	0·8	2·5	1·5	0·4	0·8
Foetal Hb. %	2·03	1·92	1·98	1·41	0·88	17·75	2·8
Plasma Hb. mg. % ...	1·7	2·5	0·42	2·1	1·1	3·4	—
Sickling test	−ve	−ve	−ve	−ve	−ve	−ve	−ve
Electrophoretic pattern ...	AA	AA	AA	−	−	AA	−
Coombs' test	−ve	−ve	−ve	−ve	−ve	−ve	−ve
Cold agglutination test ...	−ve	−ve	−ve	−ve	−ve	−ve	−ve

M.C.V. varied from 97·0 to 113·0 cuμ and M.C.H.C. from 30·0 to 38·0 per cent.

Reticulocytes varied from 2·5 to 25·0 per cent.

Total white blood cells varied from 5,400 to 15,300 per cmm.

Peripheral blood in all cases showed a variable number of characteristic *microspherocytes*. Large-sized red cells, some showing a polychromatic stain, were seen in all cases. Red cells showed a 'two-cell type population' contributed by the small microspherocytes and the large cells. Fig. 1 (*vide Plate*) shows a number of typical spherocytes in the peripheral blood of one of the patients (No. 2).

In two cases (Nos. 1 and 3) with moderate degree of anaemia, a few immature cells (normoblast C 2-3 per cent ; neutrophilic myelocytes 1-2 per cent; and metamyelocytes 1-2 per cent) were found. Platelet count was within normal limits and sickling test negative in all the cases.

Osmotic fragility of red cells in hypotonic saline solution was increased in all. Significant haemolysis started on an average at 0·62 per cent (range 0·52 to 0·72 per cent) and completed at 0·34 per cent (range 0·32 to 0·36 per cent) solution of sodium chloride. Results of 24 hours' *incubation fragility* in sodium chloride solution done in 3 cases are shown in Table 2.

TABLE 2—SHOWING RESULTS OF 24 HOURS' INCUBATION FRAGILITY

Subject	Before incubation (per cent)	After 24 hrs. incubation (per cent)
Case 1 ...	0·64—0·36	0·76—0·36
Case 2 ...	0·64—0·36	0·88—0·24
Case 6 ...	0·68—0·36	0·84—0·40
Normal values ...	0·44—0·32	0·72—0·24

TABLE 3—SHOWING RESULTS OF INCUBATION AUTOHAEMOLYSIS DONE IN 2 CASES

Subject	Autohaemolysis	
	After 24 hrs. (per cent)	After 48 hrs. (per cent)
Case 2	3·59	14·2
Case 6	0·82	5·89
Normal values ...	0—0·5	0·4—3·5

Mechanical fragility of red cells done in three cases (Nos. 1, 2 and 6) showed values of 18·4, 6·4 and 3·7 per cent respectively (Normal values mean 3·58 per cent, range 2·32-4·8 per cent—Chatterjea *et al*, 1956). Plasma bilirubin varied from 0·4 to 3·75 mg. per 100 ml. Foetal haemoglobin was elevated in only one case (17·7 per cent in Case 6), in others the value varied from 0·88 to 2·8 per cent. Plasma haemoglobin level, varying from 0·42 to 3·4 mg. per cent, was normal in all cases. Serum iron estimated in 4 cases (Nos. 1, 2, 3 and 7) showed a range of 63 to 100 μg. per cent. Combs' test was negative and cold agglutination titres normal in all the cases. Paper electrophoresis of haemoglobin done in 4 cases (Nos. 1, 2, 3 and 6) showed a normal pattern in all.

Bone marrow examination—This was done in 5 patients. Four cases (Nos. 1, 2, 3 and 7) showed hypercellularity with normoblastic hyperplasia of varying degree (Fig. 2, *vide Plate*) ; granulopoiesis and thrombosis did not show any significant abnormality. In the fifth patient (Case 6) the myelogram was essentially normal.

Haemostatic tests and Coagulation study—Three patients (Nos. 3, 4 and 5—three brothers) in this series had history of gum bleeding and epistaxis. Significant finding was prolonged bleeding time in all of them (No. 3: 19′-0″ ; No. 4: 12′-0″ ; No. 5: 5′-0″). Plasma prothrombin activity was normal in all. Prothrombin consumption was depressed only in No. 3.

RADIOLOGICAL INVESTIGATION :

Roentgenological examinations of skull and bones of the extremities were done in 3 cases (Nos. 1, 3 and 7). All cases showed a generalised mottling appearance in skull with evidence of osteoporosis in hand bones. None of the cases showed sun-ray appearance in skull. Cholecystogram done in 2 cases (Nos. 3 and 7) did not show any abnormality.

FAMILY STUDY :

This was done on the available parents, siblings and other family members. They were usually asymptomatic and had no anaemia, jaundice or splenomegaly. Two patients (Nos. 4 and 5) in this series were diagnosed during family study.

Case 1—Father showed significant numbers of spherocytes in peripheral blood with increased osmotic fragility of red cells in hypotonic saline solution (started at 0·52 per cent and completed at 0·32 per cent). Mother was normal.

Case 2—Father and one brother were examined. Both of them had spherocytes in peripheral blood ; osmotic fragility of red cells was slightly increased in the father (started at 0·52 per cent and completed at 0·32 per cent) and normal in the brother.

Cases 3, 4 and 5—They were brothers. The father and another brother were examined ; the former showed spherocytes in peripheral blood with increased osmotic fragility of red cells (started at 0·52 per cent and completed at 0·32 per cent) and the latter was normal. On interrogation it was learnt that the mother had history of epistaxis and menorrhagia ; she did not show spherocytes in her blood.

Case 6—Only the mother and one sister could be examined. Mother showed a few spherocytes in peripheral blood. The osmotic fragility of red cells was slightly increased. The sister was normal.

Case 7—Both the parents were examined. Father had spherocytes in peripheral blood with increased osmotic fragility (started at 0·52 per cent and completed at 0·36 per cent). The mother was normal.

COURSE OF ILLNESS :

All the cases were followed up to know the natural progress and evolution of the disease. In three cases (Nos. 3, 4 and 5), the follow-up period was 6 years. During the period of observation the change in clinical and haematogical status showed in general only minor degrees of fluctuation. One of the patients (No. 3), however, had a crisis.

SPLENECTOMY :

Only two cases (Nos. 6 and 2) in this series have so far been splenectomised. The immediate response was good. In No. 2, haemoglobin level increased from 8·7 to 13·0 g. and the P.C.V. from 29·0 to 37·0 per cent. Nine months after splenectomy, the patient has been maintaining a normal blood picture. In No. 6, haemoglobin increased from 10 g. to 12·4 g. and the P.C.V. from 26 to 37 per cent. Examined two months after splenectomy blood values were found to be essentially normal. Reticulocyte count and plasma bilirubin values attained normal values in both the cases, but spherocytes persisted.

SPLENIC PATHOLOGY :

Case 6—Spleen weighed 125 g. Capsule was thickened. Some of the malpighian corpuscles were small and atrophied. Pulp was intensely congested with dilated sinuses. There were a number of normoblasts and eosinophils scattered in the pulp. Reticuloendothelial cells were prominent but did not show any significant proliferative activity. Haemosiderin granules were scanty and erythrophagocytosis was rarely seen. Trabecular tissue was not prominent

Case 2—Spleen weighed 645 g. Capsule was thickened. Most of the malpighian corpuscles were atrophied. Pulp was very intensely congested with greatly dilated sinuses. Walls of the sinuses were prominent and reticuloendothelial cells were increased. Arterioles were thickened and there was evidence of periarterial haemorrhage and formation of small fibrosiderotic nodules. Haemosiderin granules were, however, scanty in general. Trabecular tissue was slightly thickened.

Discussion

In most of the cases of the present series, the clinical and haematological features were clear cut and the diagnosis could be easily made. Case 3 was interesting in view of the association of other hereditary haematological abnormalities, viz., vascular pseudohaemophilia and anti-haemophilic globulin factor deficiency. This patient was first admitted with haemorrhagic manifestations when the specific defects in haemostatic mechanism were identified. Strangely enough spherocytosis was not recognised at that time, though the patient had splenomegaly and jaundice. Spherocytosis was diagnosed when he was admitted one year later with symptoms of high fever and severe anaemia representing presumably manifestations of crisis. During the crisis, spherocytosis was pronounced and the diagnosis easier. Similar spherocytosis during crisis was also observed by Dameshek and Bloom (1948). Presence of spherocytosis in the father and history of excessive bleeding in mother and the characteristic clinical and haematological data in 2 brothers (Nos. 4 and 5) support the diagnosis of a double disorder, viz., hereditary spherocytosis and vascular pseudohaemophilia (von Willebrand's disease) in the three brothers. No. 3 had an additional deficiency of antihaemophilic globulin.

In the present series, six were Bengalees and one Anglo-Indian. It may be mentioned in this connection that we had also seen a typical case of hereditary spherocytosis in a 23 year old South Indian boy through the courtesy of Dr. P. Rao of Andhra Medical College, Visakhapatnam.

Coombs' test was negative and no evidence of abnormal antibodies could be detected in the serum of any of the patients, not even in Case 3 during crisis. We have found these tests useful in differentiating the condition from acquired haemolytic anaemia particularly before the family studies could be completed. But it must be admitted that in the confirmation of diagnosis, evidence of haematological stigmata in the parents and siblings were always more dependable than the absence of any immunologic disturbance.

In two patients (Nos. 3 and 6), jaundice was absent. The total plasma bilirubin content in these patients was 0·8 and 0·4 mg. per cent. Absence of jaundice, anaemia and even splenomegaly are not unknown in this condition. That is why the new term 'hereditary spherocytosis' is preferable to older terms like 'congenital haemolytic anaemia' or 'familial acholuric jaundice'.

Normal level of plasma haemoglobin and favourable response to splenectomy indicate that haemolysis in this condition is mainly intrasplenic. Intravascular haemolysis of significant degree, a common feature in thalassaemia and sickle cell anaemia, does not occur in this condition (Das Gupta *et al*, 1955). Similar observations were also reported by Crosby and Dameshek (1951).

Foetal haemoglobin was raised in only 1 case (No. 6). Singer *et al*, 1951 also obtained increased foetal haemoglobin values in some of their hereditary spherocytosis cases. The exact significance of this finding is not known.

It is felt that awareness of the condition and institution of relevant investigative procedures which are simple will bring into light instances of hereditary spherocytosis from other parts of the country.

Summary

Seven cases of hereditary spherocytosis are reported in detail. All were Indians. Their ages varied from 2½ to 26 years. In one family, there were three brothers who had associated vascular pseudohaemophilia. In every case spherocytosis of varying degree was found in either of the parents. Splenectomy was done in one case with beneficial result.

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References

Bâtabyal, J. N. and Wilson, J. M. G.—*J. Indian M. A.*, **30** : 8, 1958.

Bing, F. C. and Baker, R. W.—*J. Biol. Chem.*, **92** : 589, 1931.

Chatterjea, J. B.—*Bull. Calcutta School Trop. Med.*, **4** : 90, 1956.

Idem—Proceedings of Symposium on Abnormal Haemoglobins, C.I.O.M.S.S., Istanbul, 1957.

Chatterjea, J. B., Ghosh, S. K., Ray, R. N. and Das Gupta, C. R.—*Bull. Calcutta School Trop. Med.*, **4** : 10, 1956.

Chatterjea, J. B., Saha, A. K., Ray, R. N. and Ghosh, S. K.—*Indian J. M. Sc.*, **11** : 553, 1957.

Crosby, W. H. and Dameshek, W.—*J. Lab. & Clin. Med.*, **38** : 829, 1951.

Daland, G. A. and Castle, W. B.—*Ibid*, **33** : 1082, 1948.

Dameshek, W. and Bloom, M. L.—*Blood*, **3** : 1381, 1948.

Das Gupta, C. R., Chatterjea, J. B., Ghosh, S. K. and Ray, R. N.—*Indian J. M. Sc.*, **10** : 517, 1956.

Editorial—*J. Indian M. A.*, **30** : 25, 1958.

Motulsky, A. G., Giblett, E., Coleman, D., Gabrio, B and Finch, C. A.—*J. Clin. Invest.*, **34** : 911, 1955.

Owren, P. A.—*Blood*, **3** : 231, 1948.

Powell, J. F.—*Quart. J. Med.*, **13** : 19, 1944.

Prankerd, T. A. J., Altman, K. I. and Young, L. E.—*J. Clin. Invest.*, **34** : 1268, 1955.

Selwyn, J. G. and Dacie, J. V.—*Blood*, **9** : 414, 1954.

Shen, S. C., Castle, W. B. and Fleming, E. M.—*Science*, **100** : 387, 1944.

Shukla, R. N., Solanki, B. R. and Parande, A. S.—*Blood*, **13** : 552, 1958.

Singer, K., Chernoff, A. I. and Singer, L.—*Ibid*, **6** : 413, 1951.

Sukumaran, P. K. and Sanghvi, L. D.—*Proc. Ninth Ann. Meet., Indian A. Path.*, Indore, 1958.

Young, L. E., Izzo, M. J. and Plaster, R. F.—*Blood*, **6** : 1073, 1951.

FORMATION OF URINARY CALCULI : AN EXPERIMENTAL STUDY

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An experimental study was conducted during 1956-57 on rats to observe the mode of formation of urinary calculi. A new method not so far reported has been employed to study the problem. Stone formation was stimulated by placing a foreign body in the bladder of these animals and the process of stone formation around the foreign body was observed. The details of the method of placing the foreign body in the bladder have been described in two previous publications (Pritam Das, 1956 and 1957). Briefly, suprapubic cystostomy was performed with aseptic precautions under ether anaesthesia and a sterile, round piece of zinc sheet 3 mm. in diameter was placed in the bladder, which was then closed with fine silk. Young albino rats weighing between 150 to 200 g., taken from the stock of Central Drug Institute, Lucknow, were employed in these experiments. Post-operatively the rats were kept on a diet of wheat chapaties, milk, green vegetables and tap water, a diet which McCarrison (1929) found to be least stone-productive.

In the first instance, in a series of 32 rats, the animals were sacrificed three weeks after the foreign body had been placed in their bladder. This constituted Group I rats. In another group, (Group II) twentyone rats were taken and one rat was sacrificed on each postoperative day to note the day-to-day change that occurred. This type of experiment was repeated several times.

In the above two groups it was noted that besides the stone around the foreign body, secondary stones formed in some of the rats. Another feature observed was the presence of a soft gelatinous mass termed here the 'coagulum' which was found adherent to the main stone or was occasionally found to be lying free in the bladder. The role of the 'coagulum' in the formation of calculi was studied by placing the 'coagulum' obtained from one rat into the bladder of another rat. This second rat was sacrificed about ten days later to observe the changes that occurred in the 'coagulum'. This constituted Group III in this series of experiments.

No bacteriological or biochemical studies were made. The 'coagulum' referred to above and the 'white speck' that will be described later in connection with Group II rats were examined histochemically.

Result

Group I.—In this group 32 rats were employed in three batches of 12, 10 and 10, and they were sacrificed 21 days after placing the foreign body in their bladder. Of these 32 rats, 29 survived the period of experiment. For sacrificing the animals, deep ether anaesthesia was given, the abdomen was opened and the entire bladder was removed. The bladder was then carefully opened from the anterior aspect and the contents were taken out. The stones obtained were desiccated for fortyeight hours in a vacuum desiccator over concentrated sulphuric acid and were then carefully weighed. The findings of these experiments are given in Table 1.

Table 1—Showing the Findings in Group I Rats

Rat No.	Weight of stone formed around F.B. (mg.)	Number of secondary stones	Weight of secondary stones (mg.)	Coagulum
2	80·5	7	23·8	None
4	118·5	Nil	—	None
5	64·7	7	16·2	None
6	18·6	6	28·5	None
7	53·85	12	19·8	None
8	161·8	8	38·1	None
9	48·5	Nil	—	Coagulum on lower pole of stone
10	33·4	Nil	—	Coagulum equal to the size of stone attached to it
11	80·6	12	20·1	None
12	93·0	Nil	—	None
43	19·8	3	25·2	None
44	35·5	4	6·3	None
45	27·5	Nil	—	None
46	25·5	Nil	—	None
47	40·5	3	10·3	None
48	62·00	Nil	—	None
49	44·3	Nil	—	None
50	84·1	8	2·7	None
51	40·8	Nil	—	None
52	36·6	1	10·2	None
93	62·6	8	12·4	None
94	39·5	12	24·8	None
95	Not recorded	7	Not recorded	None
97	42·00	Nil	—	None
98	44·7	3	14·0	Coagulum attached to upper pole
99	33·8	18	27·6	Thread like material to which a number of concretions were attached
100	21·8	Nil	—	Large coagulum at lower pole
101	Not recorded	2	Not recorded	Large coagulum on the lower pole
102	25·6	8	49·0	None

The amount of stone formed around the foreign body varied widely. The smallest stone was 18·8 mg. and the largest weighed 161·00 mg. The variation could have been due to various factors which were not studied in this series.

Besides the main stone around the foreign body secondary stones were observed to have formed in 19 cases. Secondary stones varied in size but were usually much smaller than the main stone. Most of them appeared to be a mass of few crystals. A few of them were, however, large and well formed. The number varied from one to 18 in one single case. In one case a number of small concretions were found attached to a thread like mucoid material.

In 6 cases a gelatinous mass of mucus-like material, the 'coagulum', was found. It looked gelatinous and had a ground-glass appearance, and was usually adherent to the main stone. It was friable and soft to feel. Its attachment to the stone was of such a nature that it partly covered the stone. In most cases it was found attached to the lower pole of the stone, and was moulded conically according to the shape of bladder neck and sometimes a prolongation of its lowermost part was seen running into the urethra. Occasionally the 'coagulum' was observed on the upper pole of the calculus also.

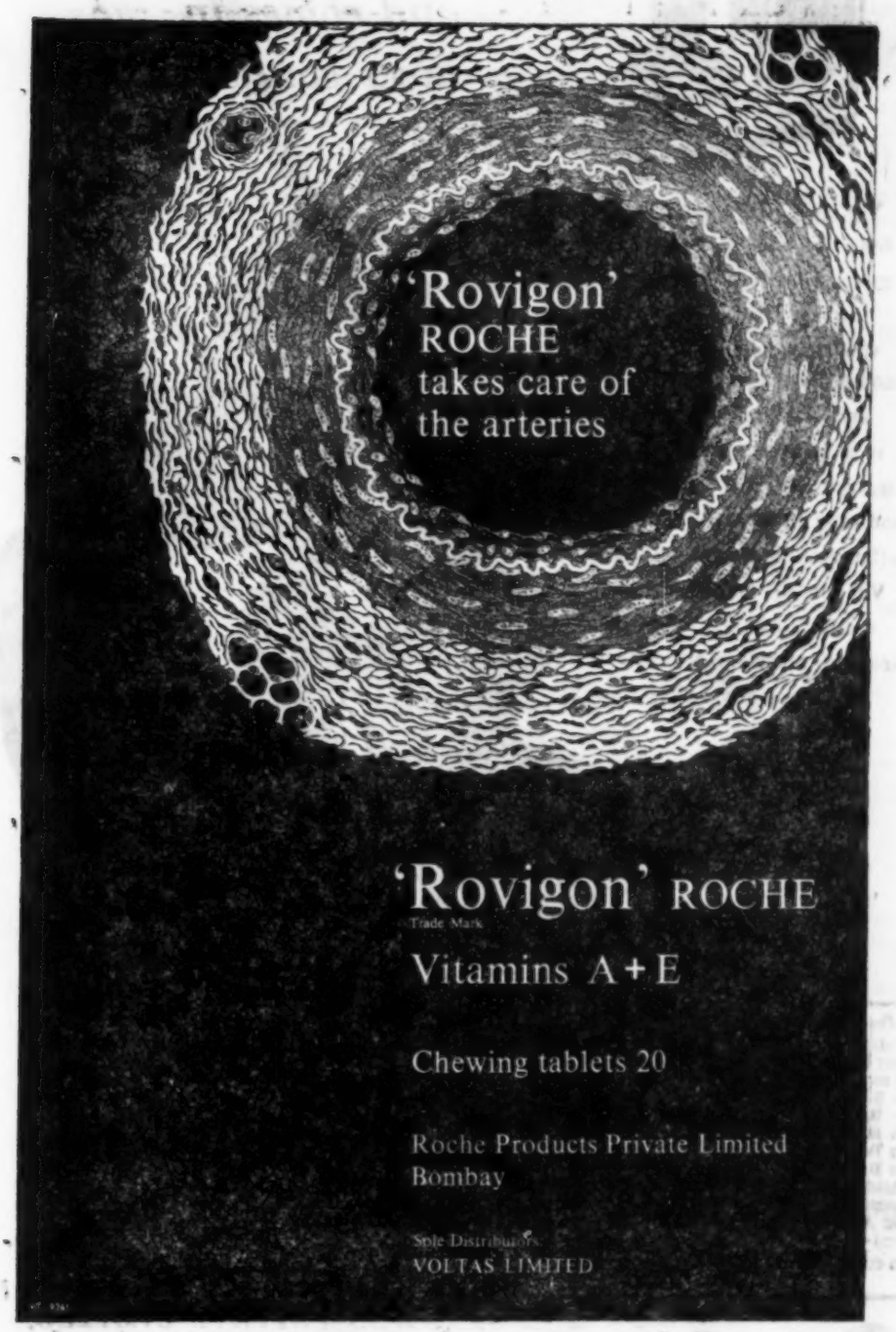
Group II—In this group, 21 rats were taken in the first instance and a foreign body was placed in their bladder. One rat was then sacrificed on each postoperative day. In this way the growth of stone as it occurred over the period of 21 days was observed from day to day. The method suffers from the disadvantage that it was not the same rat in which changes were observed but it was a different rat on every day. However, there appears to be no other method to observe the sequence of events that are taking place. After preliminary observations on these 21 rats, the experiment was repeated a number of times, and in all 109 rats were experimented upon in this group. The findings in these experiments are detailed in Table 2. From these observations the following appeared to be the manner of stone formation around the foreign body (Fig. 1).

After the first 24 hours the foreign body was found slightly adherent to the bladder mucosa by its margin on one spot over an area of about 2 mm. The foreign body could be easily separated and on separation a slightly whitish patch was seen on the bladder mucosa at the site of attachment. On the second day this attachment was noted to have become more firm. On pulling, the foreign body came off easily and a raised white area was seen on the bladder mucosa at the site of attachment. It will hereafter be referred to as the 'white speck'.

TABLE 2—SHOWING DETAILS OF FINDINGS IN GROUP II RATS

F.B.=Foreign body. Upper and lower poles and anterior and posterior surfaces are according to position of F.B. in the bladder

Day of P.M. after operation	Rat No.	Findings
1st day ...	61	Slight attachment of F.B. to bladder mucosa. F.B. came off on gentle pulling. A whitish patch remained on bladder wall. Small amount of mucus-like material covering F.B.
	223	F.B. appeared to be attached to bladder mucosa by a mucus-like substance which broke off on pulling. A whitish substance was found adherent to the margin of F.B. over 1 to 2 mm. distance
	224	No attachment, F.B. same as it was put in.
2nd day ...	62	F.B. attached to bladder wall. On pulling, it came off leaving a whitish patch on bladder wall. A similar whitish material was adherent to the magin of F.B.
	225	F.B. attached to bladder wall, white raised area situated at the junction
	226	F.B. lying free in bladder cavity. A white raised speck is present on the margin of F.B. over an area of 1 mm. A small raised area on bladder mucosa indicated the site of attachment
	237	F.B. not attached, lying free, no white speck
	238	F.B. attached to bladder wall. Came off by gentle pulling. White speck on the bladder mucosa
3rd day ...	63	F.B. attached to bladder mucosa at one place and most of the F.B. appears to be covered with a layer of mucus-like material
	227	F.B. free. A white speck on edge of F.B. over a distance of 1 to 2 mm.
	228	F.B. lying free. There was a very small deposit of stone material on the lower pole as well as on one surface of F.B. No speck. A small soft coagulum seen below the lower pole of stone. From the coagulum a thread-like projection was extending into the urethra
	239	F.B. attached to bladder mucosa. On pulling, the white speck separated from the bladder as well as the F.B. A large piece of coagulum was found on the F.B.
	249	F.B. attached. White speck remained attached to bladder on pulling
	250	F.B. attached to bladder mucosa. White speck came off with F.B. on pulling.
	251	No attachment, no white speck, stone material deposited on one pole of F.B.
4th day ...	64	F.B. lying free, white speck on F.B., surface of F.B. covered with whitish mucus-like material. A small raised spot indicated site of F.B. attachment. A small concretion lying free in bladder
	229	A thin layer of stone material was present on one surface of F.B. This surface was found to be joined to bladder by a mucus-like material. On the other surface of F.B. mucus-like substance was found deposited.
	230	Stone material deposited at one place on the margin of F.B. for a distance of about 2 mm. probably on the surface of white speck
	240	F.B. covered with a large coagulum. At one spot a white speck was present. Stone material was deposited on another part of the margin
	241	F.B. covered by a large coagulum. Some stone material was present on surface of F.B. beneath the coagulum
	242	Stone material deposited mostly on margins. A doubtful indefinite speck was present
	243	Small amount of stone material deposited at one place on F.B.
	252	Small amount of stone material deposited on lower pole and on one surface of F.B. A small coagulum was found lying free in bladder.
5th day ...	65	F.B. covered with a thin layer of stone material
	231	F.B. found firmly attached to the bladder mucosa by its margin over a distance of 2 mm. or so. Peritoneal cavity was full of urine because of leakage from bladder.
	232	F.B. lying free in bladder with stone material deposited on one surface and at the margin at two places
	244	Stone material deposited all round the margin of F.B. in a radiating fashion
	245	As in 244
	246	Small amount of stone material heaped up at one place on the margin of F.B. giving the impression that it was deposited on the white speck
	253	White speck on margin of F.B. A small amount of stone material was present at another spot on the margin of F.B.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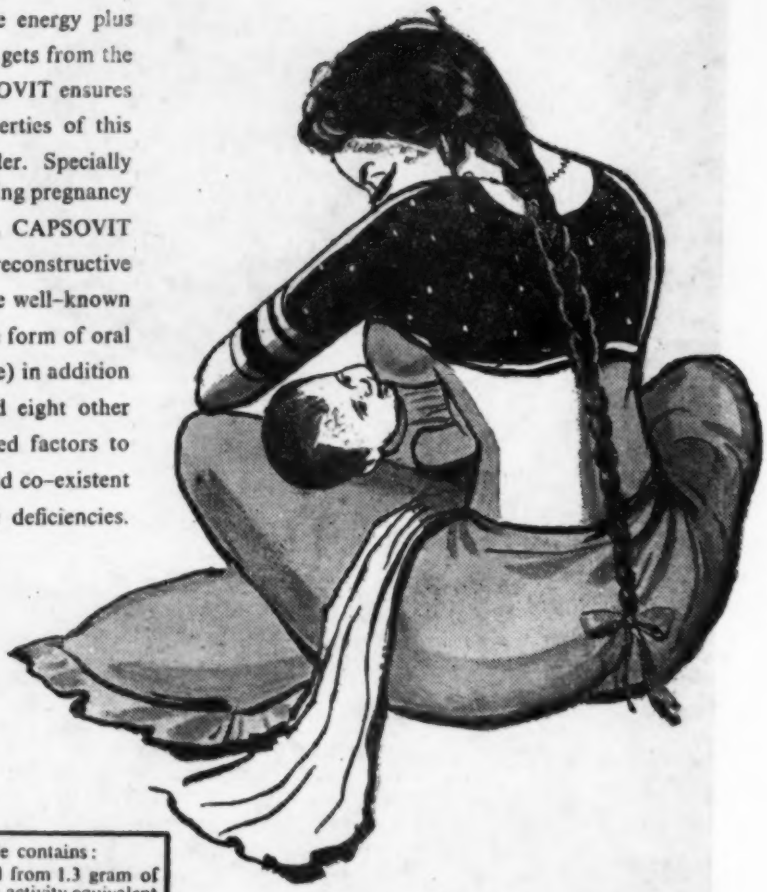

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Liver Extract Powder derived from 1.3 gram of fresh liver having Vitamin B_{12} activity equivalent to 0.325 mcg. of Cyanocobalamin.	
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TABLE 2—*Continued*

Day of P.M. after operation	Rat No.	Findings
	270	Quite a large amount of crystalline stone material found covering the posterior aspect of F.B. Three small concretions separate from F.B. were present
	271	Thin layer of stone material deposited on both surfaces, secondary concretion present
	272	Stone material on lower pole. White speck on opposite pole
	273	A long hard conical projection at one pole of F.B. It was not the crystalline stone material as was usually seen, but was smooth and glossy. It broke off on handling. Small amount of stone material was found deposited at other places
	286	F.B. covered with a small amount of stone material and there was a large coagulum attached to the posterior aspect of lower pole of F.B.
	287	Small amount of stone material deposited on upper pole. A white area on bladder wall 1 mm.×1 mm.
	288	Small amount of stone material particularly on lower pole. An elongated coagulum was found sticking to the stone
	289	Small amount of stone material particularly on one pole and edges. A white speck on bladder
	290	Stone material mostly on upper pole of F.B.
	291	Stone material all round, more on one pole. Small coagulum present
	292	Very small amount of stone material on F.B.
	293	White speck present on one pole of F.B. and stone material on another
6th day ...	296	Stone material on F.B. small in amount. A large piece of coagulum attached to the lower pole covered both surfaces of F.B.
	297	Small amount of stone material all round the F.B. margin and one surface. It was crystalline
	298	Very small amount of stone material on margins of F.B. and on one surface
	299	Stone material deposited more on lower pole and a little on surfaces. A white speck was present on bladder
	300	No stone material, no speck, no coagulum
7th day ...	66	Stone material deposited at one end of F.B. and a coagulum attached to stone. Another coagulum lying free in bladder
	254	Small amount of stone material on lower pole of F.B. and on one surface. At the upper pole a small knob-like projection was present and looked as if stone material was deposited on the white speck
	274	Stone material on margin and surfaces, coagulum at one pole, firm
	275	Stone material all round F.B.
	408	Small amount of stone material more on one surface
	409	Small amount of stone material all round the F.B.
	500	Stone material present mostly over lower pole
	501	A large mass of coagulum completely enclosing the F.B. within it was found
8th day ...	67	F.B. surrounded by stone material. At the upper pole there was a conical projection of stone
	255	Quite a large amount of stone material around the lower pole and smaller amounts all round the F.B.
	276	Quite a large amount of stone around F.B.
	277	Quite a large deposit around F.B. and a piece of coagulum
	278	Stone material all round F.B.
	279	Large crystalline deposit and a coagulum
	280	Fair amount of stone material around F.B.
	281	Fair amount of stone material around F.B.
	282	Quite a large stone
	301	White speck on F.B. No deposit of stone material
	302	Stone material all round F.B. A coagulum on lower pole of F.B. which was soft in consistency
	303	No white speck. No stone
	304	No stone. No white speck. No coagulum
	305	No stone. No white speck. No coagulum
9th day ...	68	F.B. surrounded by quite a thick layer of stone material, one of the surfaces of the stone sticking to the bladder wall by a mass of thick whitish mucus-like material and easily separated

TABLE 2—*Continued*

Day of P.M. after operation	Rat No.	Findings
	307	Small amount of stone material on both poles and one surface
	308	Fair amount of stone material on both poles and one surface
	309	Fair amount of stone material all round F.B. more marked on lower pole
	400	Fair amount of stone material present on F.B. more marked on lower pole. A number of small concretions were present between the stone and fundus of the bladder
	401	Very small amount of stone material deposited on F.B., white speck present on upper pole of F.B.
	403	Stone material deposited all round the F.B., large amount around the lower pole
	404	F.B. attached to bladder wall. On pulling, the white speck came off with the F.B., stone material was found deposited on margins and surfaces of the F.B. in small amount
	405	Fair amount of stone material on margins and surface. A small white speck on F.B. lightly attached to bladder wall. An irregular shaped coagulum was found lying free by the side of F.B.
	406	Small amount of stone material on margins and surfaces of F.B. A conical projection of stone material on the lower pole
10th day ...	69	F.B. covered all round with stone material. On surface a whitish coagulum like material was found covering it
11th day ...	70	F.B. surrounded with moderate amount of stone material. A few small concretions were also present
	256	Fair amount of stone material on upper pole
	260	Thin layer of stone material all round. Coagulum present occupying the bladder neck. Evidence of white speck at one place. A number of small concretions present Some of the concretions found entangled in a mucoid like material on the wall of bladder
	283	Stone material all round F.B., more on lower pole
	284	Stone material all round F.B., more on lower pole
	285	Very large stone
	502	A large stone
	503	Large stone, no coagulum
	504	Large amount of stone material around F.B.
	505	A large stone
	507	Small amount of stone material around F.B. A number of secondary stones were present; one of the secondary stones was different from others; it appeared to be of a homogeneons material and of a ground-glass appearance
12th day ...	257	A small amount of stone material all round the F.B.
	71	F.B. surrounded with a moderate amount of stone material
	261	Very flimsy, fine deposit around F.B., no white speck
	262	Stone material deposited all round the F.B. A coagulum was found attached to the lower pole
14th day ...	72	Very thin film of stone material around the F.B.
	258	Moderate amount of stone material all round F.B.
	263	Very thin deposit of stone material on F.B. A small coagulum was found attached to it
15th day ...	73	Stone formed around the lower half of F.B
	264	A very thin layer of stone material deposited all round F.B.
16th day ...	74	F.B. surrounded by stone material specially around the lower pole. One secondary stone
17th day ...	75	F.B. surrounded by stone. 5 secondary stones. One small coagulum attached to the lower pole, and the coagulum was found prolonged downwards into the urethra
	265	Fair amount of stone material on F.B., a large number of secondary stones. Coagulum attached to lower pole and prolonged into urethra
	266	Fair amount of stone material around F.B.
18th day ...	76	Moderate amount of stone material around F.B.
19th day ...	77	Apparently no stone material on F.B., no white speck, no attachment
20th day ...	78	Bladder full of stones. One big stone around F.B., other small concretions arranged on a raised thickened surface of bladder
21st day ...	79	One large stone on F.B. Bladder slightly thickened and distended
24th day ...	80	One large stone around F.B. Bladder wall thickened and hypertrophied. One small distinct patch of leukoplakia

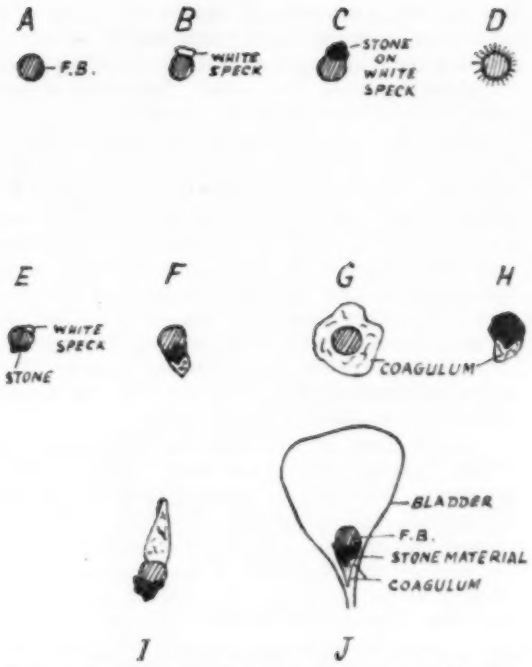

FIG. 1—DIAGRAMMATIC REPRESENTATION OF THE VARIOUS STAGES AS OBSERVED IN STONE FORMATION AROUND THE FOREIGN BODY

F.B. = foreign body is cross hatched, stone is in black, and the 'coagulum' is shown as transparent. A—foreign body as it was placed in the bladder. B—'white speck' on the margin of the F.B. C—stone material heaped up at one place as if deposited over the white speck. D—stone material deposited on F.B. in a radiating fashion. E—white speck on margin of F.B. lying bare and the stone material deposited at another place. F—foreign body with stone material on lower pole, the coagulum partly covering the stone. G—F.B. completely surrounded by 'coagulum' as observed in rat No. 501. H—'coagulum' attached to stone. I—'coagulum' on the upper pole of F.B. and stone on the lower pole. J—F.B. lying in the bladder neck region with stone on the lower pole and 'coagulum' around the lower pole of the stone.

The 'white speck' was about 2 mm. in length and oval in shape with a slight depression in its centre. On the third day the foreign body was attached to the mucosa or was found lying free in the bladder cavity. If it was attached it could be pulled off easily, but this time the 'white speck' came off with the foreign body rather than remaining in the bladder, indicating that by this time the 'white speck' was more firmly attached to the foreign body than to the bladder. If the foreign body was lying free then also the 'white speck' was observed to be adherent to the margin of the foreign body. By this time the foreign body itself was found to be covered, in some cases, with a thin layer of mucus-like material. A large 'coagulum' was found to be adherent to the foreign body in rat No. 239, while a 'coagulum' was lying free in the bladder of rat No. 228, both sacrificed on the third day. Of the 15 rats sacrificed in the first three days, eleven showed evidence of attachment and four showed no evidence of attachment to the bladder mucosa. In four cases there was a covering of mucus-like material on the foreign body.

On the fourth day the foreign body was found to be lying free in the bladder without attachment in all the eight rats sacrificed on this day. The 'white speck' was visible on the margin of the foreign body in two cases. A small amount of stone material was found deposited on the foreign body in seven cases and a 'coagulum' was seen in three cases. On the fifth day a larger deposit of stone material was seen. In one case the stone material was found heaped up at one place on the margin of the foreign body in such a way that it appeared to be deposited over the 'white speck'. In three other cases the 'white speck' was lying bare while the stone material had deposited on the margin of the foreign body at a different place. On an average the deposit was more on the surface than on the margin of the foreign body. 'Coagulum' was also seen frequently on the foreign body. A notable and unusual feature was observed in rat No. 273. In this case an elongated conical projection about 4 mm. long was found attached to the upper end of the foreign body. This projection was made of a smooth and glossy material somewhat like candle-wax. It was not soft like the 'coagulum' but was hard and gave the impression as if the 'coagulum' had become hardened. It was brittle and got disintegrated in an attempt to cut sections for microscopic examination. Altogether 19 rats were sacrificed on the fifth day, of which 18 showed deposition of stone material on the foreign body. The 'white speck' was seen in five cases and in one case, rat No. 231, the foreign body was still attached to the bladder mucosa. The 'coagulum' was present in three cases and a secondary stone had formed in one.

On the sixth day no stone material was found deposited in one case, nor was a speck or a coagulum seen in it. The rats sacrificed on the seventh day showed a larger amount of deposit of stone material. One interesting feature was noted in rat No. 501, where the foreign body was found completely enclosed in a mass of 'coagulum' which was twice the size of the foreign body itself. The foreign body along with the 'coagulum' obtained from this rat was placed in the bladder of another rat. The result will be described under Group III.

Fourteen rats were sacrificed on the eighth day. It was surprising to note that four of them showed

no deposit of stone material on the foreign body. In three of these there was no 'white speck' or 'coagulum' either, and the foreign bodies appeared to be the same as when they were put in. In the rest of the cases the foreign body was more or less completely surrounded by stone material.

On the ninth day the stone was usually larger than on the previous day as was expected. One unusual feature observed was that in one case, rat no. 404, the foreign body was still attached to the bladder wall. On pulling it came off along with the 'white speck'. Rat no. 405 showed another interesting feature. A 'white speck' was present on the margin of the foreign body, it was still uncovered with stone material although the rest of the foreign body showed deposit of stone all round.

On the tenth, eleventh, twelfth and the thirteenth day the stone was found to have become larger, and occasionally a 'coagulum' was found. An interesting feature was observed in rat no. 260 in the way that a number of secondary stones were found lying entangled in a mass of mucoid material on the surface of the bladder mucosa. Another important feature was seen in rat no. 507 sacrificed on the eleventh day. Here a number of secondary calculi had formed in the bladder. One of the secondary stones was different from the others. It had a homogenous non-crystalline appearance as if a mass of 'coagulum' had become hardened.

On subsequent days, the size of the stone around the foreign body was found to be larger in most cases. Occasionally, however, the foreign body was seen surrounded only by a small amount of stone material and in rat no. 77 sacrificed on the nineteenth day there was no deposit of stone at all, nor was there a 'white speck' or 'coagulum' on it. In the last three cases sacrificed on the twentieth, twentyfirst, and twentyfourth days' there was a large stone in each case and there was evidence of bladder hypertrophy. In rat no. 80 sacrificed on the twentyfourth day a white leukoplakia-like patch was observed on the bladder mucosa.

Thus the sequence of events in the formation of stone around the foreign body was that it first got attached to the bladder mucosa. A raised 'white speck' formed at the site of attachment and by the fourth day the foreign body along with the 'white speck' got detached and came to lie free in the bladder. During this period the foreign body also acquired a thin layer of mucus on its surface. On subsquent days the foreign body got covered with stone material which gradually grew larger. The foreign body got completely covered with stone by the tenth day. During this period small masses of mucus-like gelatinous material were occasionally observed covering the stone partially. Many variations from the above sequence were noted. Secondary stones were observed after about the tenth day.

Group III.—In this group are included those experiments in which the role of 'coagulum' in the formation of calculi was assessed. The 'coagulum' obtained from some of the rats in group II were placed into the bladder of rats in this group. These rats were sacrificed a week to a fortnight after the operation, and the changes that had occurred in the coagulum during this period were observed by naked eye as well as by teasing the material under a high power dissection microscope. The experiment was conducted on five rats, the details of which are given in Table 3.

In one case, rat No. 240, the 'coagulum' had become smaller in size and much harder in consistency. The material obtained was brittle and an attempt made to section it resulted in its complete disintegration. It was not calcareous to feel. In another rat (No. 288), a small rounded stone formed around the lower end of the coagulum that had been placed in its bladder. In the remaining three cases the coagulum appeared shrunken and of a pale straw colour. Crystals of stone material were found deposited on the surface of the 'coagulum'.

Histochemical examination of the 'white speck' and the 'coagulum'—Sections of the bladder wall, with the 'white speck' attached to it, were made in five cases. They were stained with haematoxylin and eosin, with special stain for calcium, and with Hotchkiss periodic Fuchsin technique. Microscopic examination of the sections showed that the white speck consisted of inflammatory cells with a large number of leucocytes and in between them was a cellular homogenous exudate (Fig. 2, *vide* Plate). The intercellular exudate took the periodic stain rather deep pink. The special stain for calcium was negative in four cases, but in one case calcium granules were definitely demonstrated in large numbers throughout the 'white speck' (Fig. 3, *vide* Plate). These findings indicated that the area of the 'white speck' contained polysaccharides and that it imbibed calcium in its substance.

Sections of the 'coagulum' were made in five cases, and these were also stained with haematoxylin and eosin, calcium stain and with Hotchkiss technique. Microscopic examinations showed the 'coagulum' to consist of a hyaline, structureless, acellular mass with a large number of clear spaces within it (Fig. 4, *vide* Plate). The material took deep to light pink stain at most places but at some it took a light blue stain, indicating that

TABLE 3—SHOWING THE FINDINGS IN GROUP III RATS

Rat No.	Procedure	Day of sacrifice	Findings
247	A large coagulum from rat no. 239 put into bladder of this rat	10th day	A few crystals were found deposited on the surface of the coagulum.
248	A large coagulum from rat no. 240 was suspended into the bladder of this rat by means of a silk thread	14th day	Two pieces of coagulum lying apart. No deposit of stone material on surface. The pieces were firm to feel. The coagulum had broken into two pieces and became hardened.
294	An elongated conical coagulum obtained from rat no. 288 was placed in the bladder of this rat	7th day	A bulbous stone material was found deposited on the lower pole of the coagulum. It was teased under dissecting microscope. After removing the stone material, the coagulum was found within it.
295	Stone along with coagulum obtained from rat no. 286 was placed in the bladder of this rat	7th day	Coagulum was found to have shrunk and to have assumed a straw colour. It was still sticking to the stone. At places crystals had deposited on the surface of the coagulum. It was teased under the microscope.
506	The F.B. completely surrounded by coagulum was obtained from rat no. 501. This was placed in the bladder of this rat	11th day	Coagulum was found to have shrunk, straw coloured. Few crystals of stone material were found deposited on its surface

it was possibly coagulated mucin. Periodic test showed it to be only weakly positive. No calcium particles could be demonstrated in any of the specimens. Flattened epithelial cells were observed covering its surface at places.

DISCUSSION

The important facts that emerge out of these experiments are: (1) the foreign body first gets attached to the bladder mucosa from which it acquires a small 'white speck' on its margin and a layer of mucus on its surface; (2) the stone material begins to deposit on the foreign body by the fourth day and completely covers it by the tenth day; (3) a 'coagulum' of mucinous material gets deposited on the surface of the stone from time to time; (4) secondary stones make their appearance on about the tenth day.

Significance of attachment—It was quite surprising to find that the foreign body got attached to the bladder mucosa. It is possible that when the detrusor of the bladder contracted to expel the urine, the foreign body got pressed upon and at the place where this pressure was most marked the foreign body got stuck into the bladder mucosa. However, it did not happen always since a few foreign bodies were recovered in which there was no evidence of attachment even after remaining in the bladder for a number of days. No stone material was found deposited on the foreign body during the period of attachment indicating that the attachment did not induce deposition of stone material on it. However, a thin layer of mucus was seen, though not always, to advance from the bladder mucosa on to the foreign body. This might not have happened if the foreign body did not get attached. Thus the attachment gave the foreign body a stationary site and prevented it from becoming 'a rolling stone which gathers no moss'. This process of attachment recalls the observation by Randall (1937) on calculogenesis in human beings, that the stone is attached to the renal papilla in the initial stages of its formation.

The 'white speck'—The 'white speck' consisted of inflammatory exudate and it came off with the foreign body. The role of the 'white speck' in the formation of calculus was carefully observed. One possible role could be that it imbibed calcium salts and became hardened into a stone and formed the nucleus of further deposition of stone material. Special stains for calcium showed plenty of calcium at least in one case indicating that it is a calcifiable material. However, complete calcification of the 'white speck' was not seen in any case.

Another possible role of the 'white speck' could be that its surface being soft and sticky the crystalloids will stay on it and not get washed away from its surface. It was observed in a number of cases that the stone material was heaped up in a bulbous manner at one spot on

the margin of the foreign body, from the shape and size of which one could surmise the possibility of the above phenomenon occurring. However it was not always so. In rats no. 240, 253, 272, and 293 the 'white speck' was lying bare and the stone material had deposited at other places on the foreign body. This shows that the 'white speck' was not essential for the initial growth of the calculus. Thus no definite role of the 'white speck' could be established.

The 'coagulum'—The 'coagulum' appeared to be an important feature in the formation of a calculus. It was a gelatinous, mucus-like material which partly surrounded the stone and occasionally large clumps of it were seen. Histochemically it was feebly positive to periodic stain, and from the way it took haematoxylin eosin stain it appeared to be mucinous material. It could have originated from the mucous membrane of the bladder or could have formed from the colloids of urine, or from both. Occasionally a mucoid jelly-like material was seen closely applied to the surface of the mucosa. This suggests its origin from the mucous membrane. On histological examination of the 'coagulum', flattened epithelial cells were occasionally observed on its surfac. This is also indicative of its possible origin from the bladder mucosa.

In most cases the 'coagulum' was seen sticking to and covering the lower pole of the stone, which was in contact with the mucosa in the region of the bladder neck. It is possible that the contact of the stone excited the mucosa to secrete mucus which along with shed epithelium accumulated on the stone in the form of 'coagulum'.

The role of 'coagulum' in the formation of stone is worth serious consideration. One possibility is that it may form a layer of organic matrix on which the minerals get precipitated. This would be in conformity with the suggestion of von Hernsbach (1856) quoted by Lichtwitz (1944) that the formation of stone depends exclusively upon the incrustation of an organic substrate by precipitated material. On the other hand, it may be that the 'coagulum' possesses ion-binding properties and by imbibing minerals from the urine the 'coagulum' gets converted into a calculus. That the urine contains uromucoids which exhibit ion-binding properties when placed in an appropriate solution has been demonstrated by Boyce *et al* (1954). The experiments in Group III were conducted to ascertain as to which of these two views was applicable here.

In four out of the five rats it was found that the 'coagulum' had shrunk in volume and the crystal of minerals had deposited on its surface, thus giving support to the view put forward by Meckel von Hernsbach. In the fifth rat (No. 248) the 'coagulum' had become hard and appeared to have got converted into a stone albeit of a different type. It is not possible to come to a conclusion or generalise from one case but it is likely that under certain circumstances the 'coagulum' may exhibit ion binding properties. This is further supported by the calculus obtained from rat No. 273 in Group II. This calculus had a smooth and glossy surface and looked like candle-wax and was hard and brittle. It did not possess a crystalline surface like other stones but it appeared as if the coagulum had become hard by some process. In rat No. 507 a similar looking secondary stone was found. Something more will be said about this stone later.

It appears that in the vast majority of cases the 'coagulum' acts only as a layer of organic matter on which the crystalloids get deposited but under certain circumstances it may itself get hardened into a stone. The latter phenomenon must be rare because inspite of a look out similar stones could not be found in other cases.

Shape of a calculus—It is a common clinical observation that the calculi assume the shape of the cavity in which they lie. No satisfactory explanation has yet been forwarded to explain this phenomenon. The process of deposition of 'coagulum' on the stone at the site where it is in contact with the mucosa explains it satisfactorily (Fig. 1, J.). After the 'coagulum' has been deposited on the surface of the stone a further layer of crystalloids get deposited and sticks to the 'coagulum'. The 'coagulum' is soft and this along with the freshly deposited crystalloid particles mould themselves to the contour of the lining of the cavity before final hardening takes place. The calculus is likely to acquire the shape of the cavity in which it lies only when the cavity is small and most of its surfaces are in contact with the mucosa.

Eccentricity of the nucleus—It has also been a common clinical observation that the nucleus of a renal calculus is usually eccentric. In the present study also the foreign body which formed the nucleus of the stone was eccentric in majority of the calculi. Following the observation of Randall (*loc. cit.*) that the nucleus of a calculus is attached to the papilla in the initial stages, it has been said that the nucleus is eccentric because the stone material is deposited on the exposed surface and not on the attached surface of the nucleus. Conversely, it has been argued that since the nucleus is eccentric in many calculi, it proves that the stones must have formed in the way as Randall described.

The observations made here on the deposition of the 'coagulum' indicate that the nucleus is likely to be eccentric. The reason for eccentricity being the disproportionate deposition of the coagulum on one side of the stone rather than due to its attachment.

Secondary calculi—The secondary calculi formed in 19 out of 29 rats in Group I. They made their appearance on about the tenth day in Group II rats. The secondary stones were mostly small and appeared to have formed by conglomeration of a few large crystals. In the fresh state the crystals separated out when pressed between the finger and thumb. One important implication of these small concretions may be pointed out here. It has been one of the earliest suggestions that the nucleus of a calculus is formed by conglomeration of crystals. Whatever the reason for precipitation of crystals the facts observed here prove that the crystals do stick together and form concretions which may later become the nucleus of a calculus. Some of the secondary calculi were quite large and well formed rounded structures. These probably formed by deposition of coagulum and minerals on the surface of the small concretions.

There is another point of interest in this study regarding the formation of secondary calculi. It is possible that a 'coagulum' lying free in the bladder got converted into a stone by binding ions from urine as discussed earlier. If a 'coagulum' was getting transformed into a calculus an intermediary stage should have been noticed. Such a condition was not met with. However, in rat No. 507 which was sacrificed on the eleventh day an unusual calculus was found which was different from other secondary stones present in its bladder. It was made of a homogenous material with ground glass translucency and it appeared as if a 'coagulum' had become hard like a stone.

The formation of secondary calculi also indicates that the presence of a foreign body in the bladder initiates certain factors which lead to stone formation. It is not only that the foreign body acts as a nucleus for the deposition of stone material on itself but something more than this happens. Its presence initiates production of 'coagulum' precipitation of crystals and formation of secondary stones.

Summary and Conclusion

An experimental study was carried on rats to observe the mode of formation of stone in the urinary bladder. Stone formation was stimulated by placing a piece of zinc in the bladder. A preliminary experiment on 32 rats was conducted to observe the changes that had occurred at the end of three weeks.

Thereafter a new method was employed to find out the mode of formation of stone around the foreign body. A group of 21 rats was taken and a foreign body was placed in their bladder. One rat was sacrificed on each successive day for 21 days. The experiment was repeated a number of times and in all 109 rats were experimented upon in this way. The sequence of events in the formation of stone was as follows: The foreign body first got attached to the bladder mucosa and remained so for the first three days. A raised 'white speck' of inflammatory exudate formed at the site of attachment. The foreign body also got covered with a thin layer of mucus during this period. Subsequently the foreign body got detached from the bladder along with the 'white speck'. From the fifth day onwards stone material started depositing on the surface of the foreign body and by the tenth day it got completely covered with stone. During the growth of the stone a gelatinous mucoid mass called here the 'coagulum' was seen covering the stone from time to time.

Another series of experiments was performed to assess the role of the 'coagulum' and it was found to act as a layer of organic matter providing the matrix.

Acknowledgments

The work was conducted at the Surgical Laboratories of the K. G. Medical College, Lucknow, under a financial grant from the University of Lucknow. The help given by the following is gratefully acknowledged: Drs. M. Mathur and M. N. Khanna for assistance, Dr. R. M. L. Mehrotra, Reader in Pathology, for histological examinations and photography, and Dr. H. K. Agarwal for Fig. 1.

References

Boyce, W. H., Garvey, F. K. and Norfleet, C. M.—*J. Urol.*, **72**: 1019, 1954.

von Hernsbach, H. M. (1856)—Quoted by Lichtwitz, L. in Colloid Chemistry: Theoretical and Applied. Ed. J. Alexander, Vol. V, 1944, Reihold Publishing Corporation, New York, page 1063.

McCarrison, R.—*Indian J. M. Research*, **17**: 1115, 1929.

Pritam Das—*J. Indian M. A.*, **27**: 50, 1956.

Idem—Ibid, **28**: 232, 1957.

Randall, A.—*Ann. Surg.*, **105**: 1009, 1937.

CASE NOTES

VITILIGO WITH RAISED BORDER

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During the course of treatment of vitiligo, in the Central Drug Research Institute two cases with raised borders were noted. It was considered worthwhile to put them on record as only four cases have so far been reported (Becker and Webermeyer, 1937; Wise, 1942; Garb and Wise, 1949; Buckley and Lobitz, 1952).

CASE REPORTS

CASE 1—I. K., aged 17 years, complained of white patches occurring on the front of both legs for 5 years, on the lateral aspect of the right malleolus for four years and on the back of both the shoulders for three months. He did not suffer from any serious illness. No family history of vitiligo was present.

The patient, while cycling, 5 years ago injured his right leg. The bruises on healing formed scabs which left slightly depigmented patches. These remained as such for nearly a year and then gradually became white and started increasing in size. The patch on the right ankle was observed nearly a year and a half after the injury. White pea-sized spots of depigmentation appeared on the shoulders three months ago and gradually increased in size.

On examination—The patient was a well-built youngman without any gross systemic abnormality.

Skin—The skin in general was healthy. No region of anaesthesia or hyperaesthesia was detected. The white spots on the legs were symmetrical. The spot on the front of the right midtibial surface measured $7'' \times 2''$ and that on the left midtibial surface measured $5'' \times 1''$. The spot on the right malleolus was $2'' \times 1''$. The border was not hyperpigmented and no leucotrichia was seen. The spots did not present any scales. One irregular white spot was present in the region of the lateral angle of each scapula. The right spot measured $1\frac{1}{2}'' \times 1''$ and the left $2'' \times 2''$. The surface was smooth and no anaesthesia, hyperaesthesia or leucotrichia was present locally. Both these spots were lined by a regular 1 mm. wide and 1 mm. raised red surface. Under a lens the border seemed to be more uneven on the periphery than on the inner aspect. It was not tender and no sign of local inflammation was present.

Laboratory examinations—Stool examinations showed both vegetative and cystic forms of *E. histolytica*. W. R. was negative.

CASE 2—Mrs. S. N., a Hindu married lady, aged 20 years, complained of two white spots on both the heels for 7 months. The patches appeared insidiously without any premonitory symptom and were slowly increasing in size.

On examination the lady was thin-built. and was five months pregnant. No systemic abnormality could be detected.

Skin—The spot on the left heel was approximately $3''$ and the right approximately $2''$ in diameter. The colour of the spot was reddish white in general and the surface yielded fine scales on light scraping. These were surrounded by a slightly raised border which was regular and measured 1 mm. in width and 1 mm. in height.

Laboratory examination—Stool examination showed vegetative and cystic forms of *E. histolytica*.

HISTOPATHOLOGY :

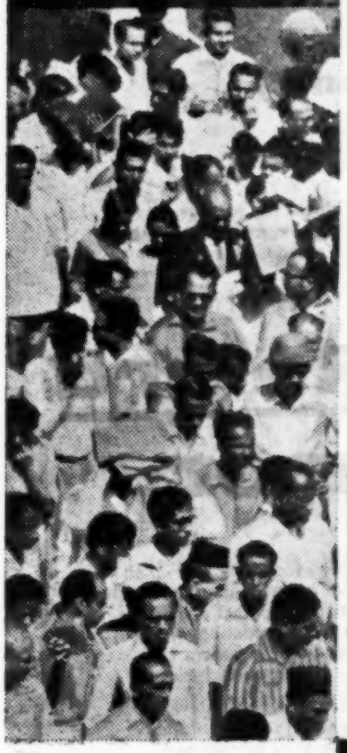
Taking the histopathological description of the border as one given by Garb and Wise (1949) and later confirmed by Buckley and Lobitz (1952) to be of an inflammatory nature biopsy was deferred to a later date till some pigmentation was produced. Biopsy was done on Case 1, on the left shoulder patch after cure. Frozen sections were cut and stained by L : 4-dihydroxy-phenyl alanine (DOPA) after Laidlaw and Blackberg (1932). Paraffin sections 5 μ in thickness were cut and stained by haematoxylin and eosin, by Masson-Fontanna stain for melanin (Pearse, 1953) and naphthol green B stain for amoebae (Goldman, 1949).

In the skin section no evidence of inflammation was seen and no amoebic cysts could be detected. The skin was DOPA positive (Fig. 2, *vide Plate*) regularly from one end to the other without any break. Melanin was found to be present in the basal cell on the external aspect condensed in the form of a cap (Fig. 3, *vide Plate*). Outwardly it was seen to be dispersed in a gradually decreasing proportion upto the stratum lucidum (Fig. 3, *vide Plate*) which is a normal feature in the Indian skin.

CYTOLOGY :

Olier-Thiersch's graft from the right scapular spot region and the contiguous normal coloured skin was taken separately. From these skins a pure epidermis preparation was made (Medawar, 1941). It was subjected to DOPA reaction. Later the melanocytes from these skin samples were isolated according to the technique reported earlier (Shukla *et al*, 1953).

Facts and Figures



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The melanocyte from the cured region (Fig. 1 and 4, *vide Plate*) was found to be comparable with the normal melanocyte (Fig. 5, *vide Plate*) from the contiguous skin. The cell isolated from the cured spot has a body which measured 15 to 18 μ by 6 to 8 μ and 2 μ thick. The melanocyte from the contiguous normal coloured skin was identical with the above mentioned cell in shape and size. We could not study the melanocytic system in the cured region for want of biopsy material from the patient.

The histopathological and cytological examination of the skin in Case 2 could not be done because that would have given a permanent painful scar on the heel.

TREATMENT :

Emetine hydrochloride, 0·05 grain was injected intramuscularly on the first day and later 1 grain of emetine hydrochloride was given for 10 days in both the patients.

RESULTS :

The white spots lost the red raised borders on the third day of injection of emetine hydrochloride in both the patients. In the second patient the white spot started regressing on the fifteenth day. In one month he was completely cured of the white spots. The first patient showed signs of improvement of colour on the scapular spot from white to dark and then gradually became normal coloured after one month and a half.

Discussion

From a comparison of the description of the white patch as given by other observers (Becker and Webermeyer, 1937; Wise, 1942; Garb and Wise, 1949; Buckley and Lobtz, 1953) with the findings in our patients, it appears that these are cases of 'vitiligo with raised border'. Becker *et al* (*loc. cit.*) believe that all the lesions of vitiligo start as a sub-inflammatory reaction which in rare cases cross the threshold and become clearly inflammatory and show a red border on the white spots. We could not confirm this histologically.

It was spontaneity in the cure of white spots by the anti-amoebic treatment that attracted our atention. The cure was effected in one month in the first case and it took a little more in the second case. The stools were positive for *E. histolytica*.

We made attempts to search for the amoebae in the skin sections in our cases without success. Our inference, that the raised border might have been due to amoebic infection, is based on the therapeutic test rather than on the histologic evidence.

The affected parts of the skin in our series became DOPA-positive after the cure. This is an evidence of resumption of the function of the melanocytes because fundamentally DOPA stain is a vital stain and it demonstrates the activity of an enzyme system where the nearest precursor of melanin in the form of DOPA melanin is present.

Summary

Two cases of vitiligo with raised borders have been reported. The depigmented patches cleared up on anti-amoebic treatment. The pathogenesis of vitiligo with raised borders has been discussed.

References

Becker, S. W. and Obermeyer, M. E.—*Arch. Dermat. & Syph.*, **36** : 216, 1937.
Buckley, W. R. and Lobitz, W. C., (Jr.)—*A. M. A. Arch. Dermat. & Syph.*, **67** : 316, 1953.
Garb, J. G. and Wise, F.—*Arch. Dermat. & Syph.*, **58** : 149, 1949.
Goldman, M. J.—*Parasitology*, **35** : 36, 1949.
Laidlaw, G. F. and Blackberg, S. N.—*Am. J. Path.*, **8** : 491, 1932.
Medawar, P. B.—*Nature* (Lond.), **148** : 783, 1941.
Pearse, A. G. E.—Histochemistry, 1953. Little Brown & Co., Boston, Appendix, p. 475.
Shukla, R. C., Karkun, J. N. and Mukerji, B.—*Current Science*, **22** : 211, 1953.
Wise, F.—*Arch. Dermat. & Syph.*, **45** : 218, 1942.

SEVERE VASCULAR SPASM OF BRACHIAL ARTERY TREATED WITH REPEATED STELLATE GANGLION BLOCK

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Introduction

Since the first introduction of stellate ganglion block by Leriche and Fontaine for cerebral vascular accidents it has been used in a wide variety of conditions. Amongst these are embolism and spasm of the vessels of the arm, head, and neck.

Case Report

S. S., a 22 year old male, was admitted on 7-1-58 with a side sweep injury to the right elbow of about 3 hours' duration.

On examination two lacerated wounds were found at the back of the upper 1/3 of the right forearm. The elbow was markedly swollen and deformed with tenderness all over. The right wrist was also swollen with a typical dinner fork deformity of Colles' fracture. Pulsation was neither present at the elbow nor at the wrist. The right

hand was cooler than the left and some degree of cyanosis was present in the nail beds.

X-ray revealed: (i) fracture olecranon and fracture of the lateral condyle of the humerus with anterior dislocation of the elbow joint and (ii) Colles' fracture at right wrist.

Operation—Under general anaesthesia (induction with pentothal followed by gas, oxygen and ether with endotracheal tube) a primary excision and debridement of the lacerated wounds were done with primary closure of the wounds. A separate long incision at the posterolateral aspect of the elbow joint was made and the lateral condyle reduced in position and fixed by a screw. The dislocation was corrected and an intramedullary wire pushed in from the upper end of the olecranon down the ulna into the lower fragment. The triceps expansion, which was badly lacerated, was repaired and the wound closed. At the end of the operation the pulsation at elbow appeared, but at the wrist level pulsation was absent. This was attributed to marked swelling at the wrist (because of Colles' fracture). Colles' fracture was reduced and an above-elbow posterior plaster slab given with the elbow flexed at 140°.

Postoperatively, the patient was put on crystalline penicillin and priscol 100 mg. 8-hourly, and the limb elevated.

On 8-1-58 at 9 A.M. the patient had some swelling of the fingers which were cold and blue. Finger movements were present. The plaster slab was removed and the arm supported by a Krammer wire in complete extension and the limb elevated. Pulsation was found to be absent both at the elbow and at the wrist at this stage also.

On 8-1-58 at 12 noon, cyanosis and coldness of the limb had increased, finger movements were diminished, sensations dulled and pulsation was absent. There was gradual deterioration till at 4 P.M. on 8-1-58 the case was referred to the author. The author gave repeated stellate ganglian blocks by following Apgar's technique of anterior approach.

An intradermal wheal was raised a little above the clavicle between the two heads of origin of the sternomastoideus. A lumbar puncture needle with its stilette was advanced directly backwards until it made contact with the lateral part of the anterior aspect of the body of 7th cervical vertebra. The needle was withdrawn 0·5 cm., the stilette removed and after negative aspiration test for C.S.F. and blood, 15 c.c. of 2 per cent novocaine was injected. Typical Horner's syndrome appeared within 1-3 minutes with an "illusion" of enophthalmos, narrowing of palpebral fissure, constriction of pupil, and Guttmann's sign of nasal congestion. Anhidrosis could not be made out because of cold weather. The block was repeated at the disappearance of Horner's syndrome to achieve persistent, continued sympathetic blocking effect. The block was repeatedly given at 4 P.M., 6 P.M., 8 P.M., 10 P.M. on 8-1-58 and at 1 A.M., 4 A.M. and 7 A.M. on 9-1-58.

The improvement was gradual. After two blocks the limb was warmer than before and cyanosis less marked. After the 4th block the limb was much warmer and cyanosis considerably less. On the morning of 9-1-58 at 7 A.M. the limb was as warm as the opposite member and it looked pink. The pulsation at the elbow and wrist had reappeared. The limb which some hours back was dead was alive once again.

Krammer wire splint was removed after 4 days and a plaster slab given after reducing Colles' fracture. Pulsation was present at this stage also. The patient was discharged on 1-2-58 after an uneventful recovery.

Discussion

In this case obviously there was interference with the blood supply of the fractured limb and the gradual deterioration during a period of 22 hours. There was no sight of improvement inspite of the measures taken and the limb was destined to become gangrenous necessitating an amputation. There could be two possible causes in this particular case for the threatening gangrene, one, the obstruction of the vascular supply because of marked swelling at the elbow, or secondly a spasm of the brachial artery.

The alternative method of treatment was exploration of the area including the course of the arteries and trying the effect of vasodilator drugs locally, viz., papaverine or novocaine or intra-arterial injection of saline or removal of the obstruction to the vessel, if present. That would have been definitely a much more hazardous procedure than the stellate ganglion block whose value is evident in this case of vascular occlusion of 22 hours' duration. This method has the inviting advantages of simplicity and efficacy.

To achieve a successful result the block must be repeated to achieve a uniform continued period of sympathetic blockage of the limb and consequent vasodilatation.

Summary

A case of severe vascular spasm in the brachial artery treated successfully with repeated stellate ganglion blocks is presented.

Acknowledgments

My thanks are due to Col. B. L. Taneja, Medical Superintendent, Irwin Hospital, for permission to use the hospital records and to Dr. Abbott for his valuable help.

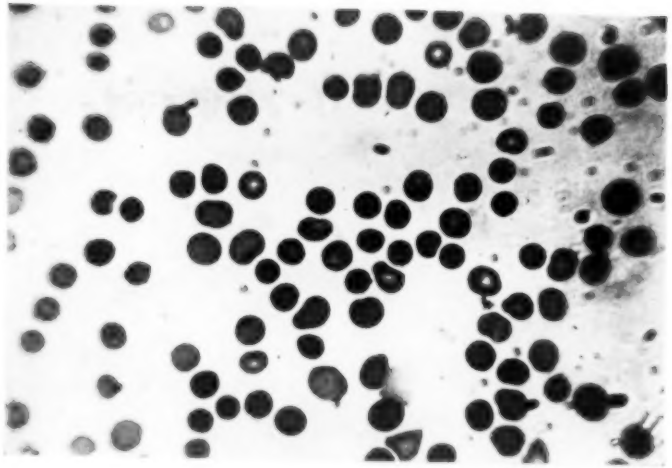


Fig. 1—Shows typical spherocytes in the peripheral blood (Case 2).

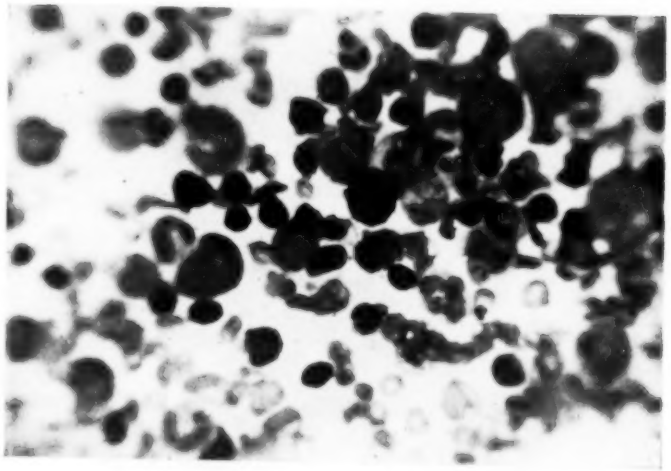


Fig. 2—Normoblastic hyperplasia seen in bone marrow smear (Case 2).

CHATTERJEA AND RAY—*Hereditary Spherocytosis* (*p. 1*)

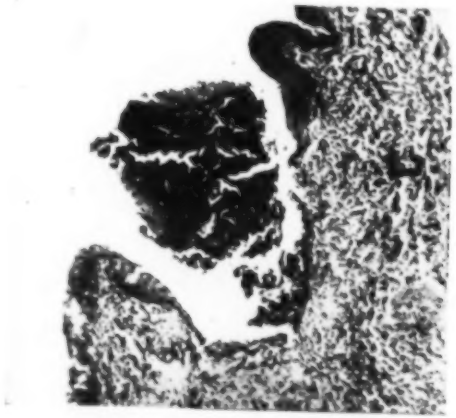


Fig. 2—Microphotograph showing 'white speck' on the bladder mucosa. (H & E).

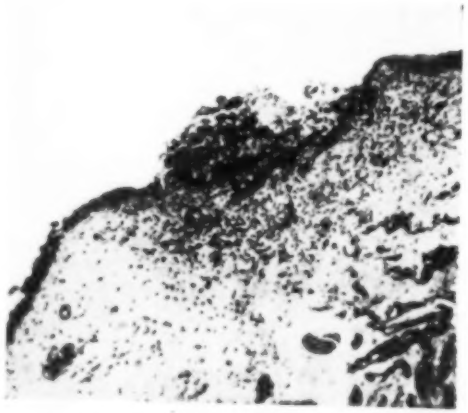


Fig. 3—Microphotograph showing 'white speck' on the bladder mucosa. Calcium stain.

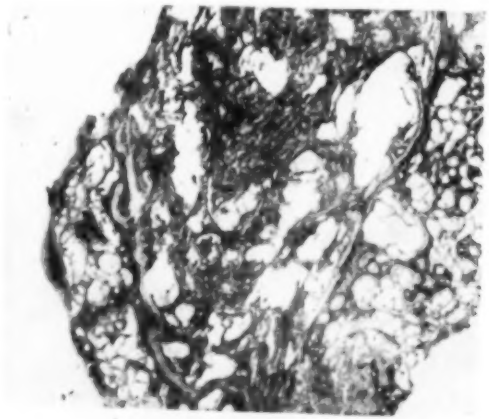
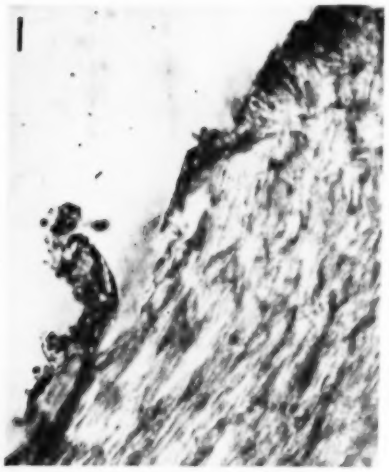


Fig. 4—Microphotograph showing 'coagulum' (H & E).

PRITAM DAS—*Formation of Urinary Calculi : An Experimental Study* (*p. 6*)



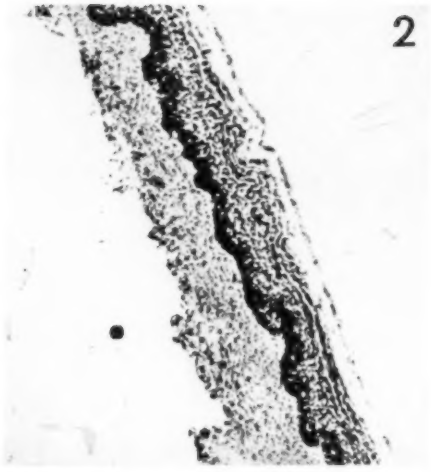


Fig. 1—Transverse frozen section of repigmented skin after modified DOPA reaction. The melanocyte is getting separated from the basal layer (Case 1). Fig. 2—Transverse frozen section of repigmented skin after DOPA reaction (Case 1)

Fig. 3—Paraffin section after treatment and cure stained with Masson Fontanna stain for melanin. Melanin is seen in the basal cells in the form of caps (Case 1). Fig. 4—Melanocyte from the treated and cured skin is seen attached to a basal cell (Case 1). Fig. 5—Melanocyte from the contiguous normally pigmented skin. The melanocyte is attached to a basal cell through its dendritic process (Case 1).

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JOURNAL OF THE
INDIAN MEDICAL ASSOCIATION

CALCUTTA, JULY 1, 1959

LONG-TERM ANTICOAGULANT THERAPY IN MYOCARDIAL INFARCTION

One of the chief indications of anticoagulant therapy is coronary occlusion with myocardial infarction.

Once the use of anticoagulants has been decided upon in case of acute myocardial infarction, heparin is the drug of choice, because of its almost immediate action. The coumarin derivatives or phenindione should be used as well, along with heparin for the first fortyeight hours. This combination is required to cover the time lag, necessary to build up the anticoagulant action of the coumarin derivatives and phenindione.

After the acute phase of myocardial infarction is over, the problem of continued anticoagulant therapy arises. The main principle involved in the long-term administration of anticoagulant preparations is prevention of recurrences of thromboembolic episodes. Before a decision is made one has to judge carefully whether the benefits to be obtained outweigh the risks involved.

Comparative results of long-term anticoagulant therapy in coronary atherosclerosis[1], showed a clear-cut evidence, that survival rates were much higher in patients receiving anticoagulants.

Recently a report[2] has been published embodying the results on controlled study of the value of long-term phenindione therapy. The period covered is two years. The workers accepted only two major studies[3, 4] whose findings were ideal enough for the purpose of comparison with their investigations. Fairly strict criteria were used in the selection of patients. On the basis of death rate, myocardial infarction recurrence rate, ability to return to work and presence of angina or dyspnoea significant differences were observed. The workers concluded that in males below 55 years, anticoagulants reduce the incidence of further infarction and benefit is expected in the continuation of anticoagulant therapy for six months after the infarction. As regards complications there were five major cerebral vascular episodes and 56 minor incidents of haemorrhage.

The therapeutic level of efficacy of the drugs cannot be assessed by using simple bed-side procedures like estimation of the bleeding time or the coagulation time. For the control of the dosage and prevention of haemorrhagic complications, an adequate laboratory service is as essential as the therapy itself. The Working Party arranged to examine each patient's one stage prothrombin time and blood biochemistry regularly at intervals of 2-3 weeks. Patients undergoing anticoagulant therapy were supplied with cards and instructions to be produced before medical attendants, dentists and surgeons in case of medical or surgical emergencies. For the upkeep of such a service, hospitals everywhere will have to provide extra medical and technical staff, extra laboratory facilities, extra record clerks to deal with steadily increasing number of patients who will have to attend every 2-3 weeks.[5] Foreseeing the likelihood of such a demand Government Health Department in Great Britain have wisely encouraged expansion of provisions for controlling anticoagulant therapy[6]. The remarks in 1958[7] "that its control would entail provision of facilities that hardly existed anywhere on the scale likely to be needed", is applicable with all the force behind the statement for our country at present.

We are afraid that the encouraging report may boost up the use of long-term anticoagulant therapy in India also. Hospitals and laboratory services in India are too meagre at present to cope with even ordinary routine work. Facilities for estimation of prothrombin time is restricted only to the very best of the hospitals in the cities. Even where facilities are present, there is complete lack of standardisation in the method of prothrombin time estimation. Moreover, in the majority of cases the desired co-operation between hospital service and the private practitioners is still lacking. It has also been a sad experience in the past that our patients have not the patience of reporting regularly. We therefore apprehend that in the absence of a proper control and co-operation as well as follow-up of cases, the risks of haemorrhagic complications might outweigh the benefits. Physicians have therefore to be very careful and the importance of laboratory service should be assessed properly to ensure, at the outset, that all the necessary facilities are provided for before such a therapeutic measure is adopted.

[1] NICHOLS, E. S., KEYES, J. N., BORG(J. F., COOGAN, T. J., BOEHRER, J. J., MULLINS, W. L., SCOTT, T., PAGE, R., GRIFFITH, G. C. AND MASSIE, E.—*Am. Heart J.*, **55** : 142, 1958.
[2] Report of the Working Party to M. R. C.—*Brit. M. J.*, **1** : 803, 1959.
[3] BJERKELUND, C. J.—Quoted from *Brit. M. J.*, **1** : 803, 1959.
[4] MANCHESTER, B.—*Ann. Int. Med.*, **47** : 1202, 1957.
[5] Annotation—*Lancet*, **1** : 718, 1959.
[6] Annotation—*Brit. M. J.*, **1** : 838, 1959.
[7] Annotation—*Lancet*, **1** : 417, 1958.

CURRENT MEDICAL LITERATURE

Long-Term Follow-up of 1500 Diabetics

BUSCHMANN, G., FRITZE, E. AND MARSCH, A. (*German M. Monthly*, **4**: 10, 1959) from the Department of Medicine, University of Gottengen from a long-term follow-up study of 1500 diabetics observe :

Before the introduction of insulin, diabetic coma was the most frequent cause of death in diabetics. To-day, the mortality due to coma has dropped from over 40 per cent to under 2 per cent. On the other hand, over 70 per cent of diabetics die nowadays of arteriosclerotic vascular lesions, the so-called long-term diabetic vascular syndrome.

In order to investigate the cause of these fundamental changes and to draw conclusions regarding treatment, the case histories, physical and laboratory findings, and the progress of 1547 diabetic patients were recorded by a punchcard system and analysed. The patients had been under continuous medical care for an average of 4 (1-11) years. The incidence of the long-term vascular syndrome, which includes first of all diabetic retinopathy, was found to be 30 per cent and rose to 70 per cent in cases of diabetes of over 20 years' duration. 53 per cent of the patients were over-weight, 11 per cent under-weight. The obese and those in poor metabolic balance were particularly liable to show vascular lesion. These were found in 34 per cent of over-weight and 18 per cent of under-weight cases, and in 43 per cent of poorly balanced ones, as opposed to 19 per cent of those who were always in good metabolic control.

Of cases of over 20 years' duration, the incidence of vascular complications was 77 per cent in those poorly or variably controlled, and 40 per cent in those always well balanced. Pulmonary tuberculosis, other infections, and liver lesions were more frequent among poorly controlled patients and also among those who suffered from a more serious form of diabetes. Although the incidence of vascular lesions rose progressively as the duration of diabetes increased, much can be done to prevent or delay this process by careful metabolic balance through diet and insulin, and by aiming at a low body weight.

Juvenile Hypertension

WIDIMSKY, J., FEJFAKOVA, H. M., FEJFAR, Z., DEJDAR, R., EXNEROVA, M. AND PIRK, F. (*Arch. Kreisl. Forsch*, **28**: 100, 1958, Ref. *German M. Monthly*, **4**: 28, 1959) from the Institute of Cardiovascular Diseases, Prague, Czechoslovakia, made a study of 256 out-patients under the age of 30 years whose blood pressure at rest regularly exceeded 150/100 mm. Hg and followed them up. 96 of them with blood pressures over 170/100 mm. Hg were studied in detail. Symptoms were absent in 61 per cent of the patients under 18 years, but in only 2·7 per cent of those between 18 and 30. The complaints were those of neurocirculatory asthenia. There were no cases of coarctation or phaeochromocytoma. None of the patients had albuminuria, and concentrating power was impaired in only two. Intravenous pyelography showed disease in 16·3 per cent of the cases (pyelonephritis, obstruction). In 57 per cent of 37 patients the blood pressure symptoms improved while they were on holiday. Other treatment failed. 70 per cent showed the signs of hyperkinetic circulatory state. Physical as well as mental work caused a prolonged rise of blood pressure. In 45 per cent of patients in the age-group 18-30 years the hypertensive state had already become firmly established. 61 per cent of them had developed hypertrophy of the left ventricle (as seen in the E.C.G.) and 25 per cent had changes in the optic fundus. The observations suggest that prolonged elevation of blood pressure in young people is the first stage in the development of essential hypertension.

Effect of Cardiac Arrhythmias on Coronary Circulation

CORDAY, E., GOLD, H., DE VERA, L. B., WILLIAMS, J. H. AND FIELDS, J. (*Ann. Int. Med.*, **50**: 535, 1959) from the Institute for Medical Research, Cedars of Lebanon Hospital, Los Angeles and the Department of Medicine, University of California School of Medicine, Los Angeles, write :

Comparative measurements of coronary artery and sinus flow, coronary blood pressure and systemic blood pressure, cardiac output and venous pressure were made in animals during regular sinus rhythm, premature auricular and ventricular systoles, auricular tachycardia, flutter and fibrillation, and during ventricular tachycardia and fibrillation.

Coronary artery flow was often reduced by these arrhythmias. Coronary sinus flow was also reduced but not to the same degree. Transient compensatory mechanisms attempt to maintain myocardial blood supply in rapid tachycardias if the systemic blood pressure and cardiac output are not too seriously compromised.

Brachial artery tracings in human patients revealed a significant lowering of systemic blood pressure, similar to those of the experimental animal following premature auricular and ventricular systoles and during auricular fibrillation, flutter and tachycardia with rapid ventricular rates.

Coronary artery flow diminished in a linear fashion as the systemic pressure decreased. Therefore, if hypotension is present during attacks of rapid tachycardia of auricular or ventricular origin, it is advisable to restore the blood pressure with vasopressor drugs until other antiarrhythmic agents take effect.

Vasopressor drugs themselves often abolish auricular tachycardia, flutter and fibrillation, ventricular tachycardia and premature auricular systoles promptly.

It was found that the antiarrhythmic effect of pressor drugs was not mediated solely through the vagus nerve, but also by a direct effect on the heart.

An explanation of the difference between "benign" and "malignant" ventricular tachycardia is offered.

Most of the tachycardias studied were found to cause a decrease in coronary flow, or did not maintain coronary flow sufficiently to meet the increased nutritional demands resulting from the tachycardia. They should therefore be treated promptly, especially in patients with coronary artery disease. (*Author's summary*).

Sodium Chloride in Oedema and Hypertension

HOLLMETER, H. J. (*Deutsch. Arch. Klin. Med.*, **204** : 198, 1957, Ref. *German M. Monthly*, **4** : 277, 1959) of Med. Univ. Klinik, Bonn, West Germany from a study of water and mineral balance in groups of healthy patients and in patients with cardiac oedema observes :

The 3 groups were kept on a salt-free diet and given, respectively, NaCl, $NaHCO_3$ and NH_4Cl by mouth for 6 days. From the 7th day all 3 groups were in addition given intramuscular injections of desoxycorticosterone acetate (100 mg. a day) for 4 days. The 4th group was composed of patients with cardiac oedema, who received only a salt-free diet combined with $NaHCO_3$ (12-16 g. daily) for 19 days. The "NaCl" group reacted to DOCA with retention of water, sodium and chloride, and increase of weight. In the "$NaHCO_3$" group there was no increase in weight nor reduction of urine output, although the urinary excretion of sodium fell. Some of the subjects in this group developed hypokalaemia which became more pronounced after DOCA. In the "NH_4Cl" group DOCA caused no increase in weight nor reduction of urine volume. The plasma chloride rose, but the sodium remained unchanged. Urinary excretion of chloride was high (due to the administration of NH_4Cl), and remained so under DOCA. The urinary potassium and sodium were unaffected by DOCA.

The administration of $NaHCO_3$ to patients with cardiac oedema reduced the oedema, despite the large quantity of sodium ingested; this loss of tissue fluid was maintained at the same rate after $NaHCO_3$ was discontinued. The withdrawal of chloride had, therefore, the same effect on the discharge of the accumulated oedema fluid as the withdrawal of sodium by, e.g., ion-exchange resins.

The author rejects the view that oedema and hypertension are attributable to either sodium or chloride retention alone. In his view it is the concurrent presence of Na and Cl ions which determines whether susceptibility to oedema and hypertension will become manifest.

Effects of Sublingual Nitro-glycerin on Pulmonary Arterial Pressure

JOHNSON, J. B., FAIRLEY, A. AND CARTER, C. (*Ann. Int. Med.*, **50** : 34, 1959) from the Cardiovascular Laboratories of the Department of Medicine of Freedmen's Hospital and Howard University College of Medicine, Washington, give in the following lines the summary of their observations on the effects of sublingual nitroglycerin on pulmonary arterial hypertension in patients with left heart failure :

The substernal distress associated with paroxysmal dyspnoea of left heart failure is frequently of such severity as to be described by the patient as substernal pain. Our experience indicates that the administration of nitroglycerin (0·6 to 1·2 mg.) sublingually is often effective emergency therapy in the relief of this respiratory and retrosternal distress.

As a result of these clinical observations a physiologic study using right heart catheterisation was made in 13 patients with left heart failure to determine some of the haemodynamic effects of nitroglycerin administration.

In 10 of the 13 patients a prompt reduction in the pulmonary hypertension was observed following administration of nitroglycerin. In four cases where we were able to measure pulmonary wedge pressure a significant fall in wedge pressure was also observed.

In 12 cases the total pulmonary resistance fell promptly during the first 15 minutes following nitroglycerin therapy. There was no consistent alteration in the cardiac output, nor was there a significant increase in heart rate.

One patient with coronary artery disease developed a typical episode of angina pectoris with radiation into the left arm similar to his well documented previous attacks during the period of control haemodynamic observations. During the height of precordial pain there was a sharp increase in the pulmonary artery pressure, and the pulmonary resistance was found to be greatly elevated. Nitroglycerin administration resulted in a prompt reduction of pulmonary artery pressure, total pulmonary resistance and complete disappearance of anginal pain. The patient had no subsequent complications as a result of this experience.

The clinical and physiologic data obtained after nitroglycerin administration suggest that this drug has an important place in the management of patients with pulmonary artery hypertension and paroxysmal dyspnoea associated with failure of the left ventricle.

Cardiac Murmur in the Newborn

BURNARD, E. D. (*Brit. M. J.*, **1** : 134, 1959) from Paediatric Unit, St. Mary's Hospital Medical School, London, in describing the relationship between the presence of murmur, a previous history of asphyxia and the maturity and the clinical condition of the baby observes that both asphyxia and dyspnoea are associated with a higher incidence of the murmur, particularly in the premature. In mature babies the incidence of the murmur that probably arises from left-to-right flow through the ductus arteriosus had a direct relationship to rectal temperature and to asphyxia at birth.

In premature births the incidence was approximately the same as in mature babies after birth asphyxia. Prematurity of itself must have accounted for the similarity.

The murmur was accompaniment of dyspnoea in premature babies and in severely breathless mature babies. Dyspnoea outlasted the murmur in premature babies. In some prematures the murmur returned if their clinical condition relapsed.

When mature babies had suffered birth asphyxia a raised respiratory rate was evident though they appeared healthy. The murmur was present in 75 per cent.

A reduction in rectal temperature seemed to result in amelioration of dyspnoea and disappearance of the murmur. Conversely, warming three babies shortly after birth brought about dyspnoea as well as the murmur.

The suggestion is made that the murmur probably means an increase in flow through the ductus arteriosus above the rate present after normal birth.

The means whereby asphyxia causes an increase in flow through the ductus, and whether this in itself is harmful or not, are at present unknown.

CURRENT TOPIC

MEDICINE IN AUSTRALIA

S. C. SEN, B.SC., M.B., D.M.R.E.

Secretary for Asia, World Medical Association and Ex-President, Indian Medical Association New Delhi

The theme of medical care in Australia is essentially that of private practice, which functions on the fee for service principle.

There are more than 11,000 medical practitioners with a population of ten million, representing a doctor-population ratio of 1 to 900. Of these practitioners, approximately 60 per cent are general practitioners, 23 per cent are specialists and 17 per cent salaried medical officers. The highest concentration of medical practitioners and particularly that of the specialists, occurs in the six capital cities where half the total population of Australia is to be found. In the last decade there has been an increasing tendency for specialist practices to be established at the more important provincial cities, particularly in group practices.

In the country areas, with their great open spaces and sparse population, the challenge of coping with a multitude of medical problems has bred a very resourceful and efficient general practitioner. The five medical schools have ensured that a good working knowledge in all the major disciplines is given to the undergraduate whilst post-graduate revision and training are encouraged through a variety of organisations.

Specialist training is also readily available and many graduates seek wider experience, frequently in the U.K. and the U.S.A.

The National Health Service

A National Insurance Act, which provided *inter alia* for the furnishing of medical services to "employed persons" was passed in 1938, but because of unacceptable conditions, the medical profession refused to co-operate, and the Act became a dead letter.

In 1944, the then Labour Government legislated to introduce a Pharmaceutical Benefits Act and Parliament passed it in 1945, the basic provision being that medicines, if the patient was to receive them free must be presented from a Government formulary of drugs. Strong exception was taken by the profession to the provisions of this Act, and the measure was nullified by the High Court as *ultra vires* of the Constitution.

There was another fight in 1949, to oppose a new Act passed in 1948 and amended in 1949, carried to the High Court and the profession won.

In December 1949, a Coalition Liberal Country Party was returned to power, and the Minister of Health at the time, Sir Earl Page—himself a medical man—proceeded to introduce in stages, a new health service—after consultation with the profession, which has met with general approval. His successor, another country general practitioner, Dr. Donald Cameron, has been instrumental in amending the National Health Act from time to time to increase the benefits available.

The National Health Service, which now involves an annual expenditure of £50,000,000, incorporates the following measures:

Pharmaceutical benefits (introduced 1950)—This will cost the Treasury this year £14,550,000.

All life saving and most disease preventing drugs are available free of charge to every citizen in Australia on the prescription of a legally qualified medical practitioner. An expert committee, on which the profession is adequately represented and whose Chairman at present is Dr. Mallen—a private practitioner and the present Chairman of the Council of W.M.A., constantly reviews the drugs which are available and recommends to the Minister for Health those that should be added to or deleted from the schedule which at the moment contains 241 items.

Medical benefits (introduced 1953)—These will cost this year £8,300,000 and are subsidised by the Commonwealth Government to those who are voluntarily insured. This represents at present about 75 per cent of the insurable population. At the beginning the Government promised to match the payment made by the insurance societies—the total payment of the two parties being 90 per cent of the average fees charged by general practitioners and some specialists—the remaining 10 per cent being paid by the patients themselves. The Government has however failed to increase the benefits to match the increased cost of living since 1953, the result being that the patient has now to meet approximately 37 per cent of the practitioners' fees (in addition to his annual subscription), the fund meeting 34 per cent and the Commonwealth Government 29 per cent. Another deficiency in the medical benefits scheme is the liability of the patient to insure himself against major surgical expenses.

Hospital benefits (introduced 1952)—There are in Australia about 850 private and 750 public hospitals. Most of the larger private hospitals are maintained by various religious orders, but usually they receive some Government assistance. Because of increasing costs, many of the smaller private hospitals have closed down, and it is more than likely that in future, most new hospitals will be erected by Government.

The hospital benefits of the National Health Service are also managed according to contributory schemes, with the exception that a Government benefit is paid in every case whether or not the patient contributes to a hospital fund. The Commonwealth Government pays a sum of 8 s. for each day a patient occupies a bed in a hospital registered to receive such assistance.

If the patient contributes voluntarily to an approved hospital benefit fund, the Commonwealth Government may contribute as much as 20 s. per day.

Invalid, old age and widow pensioners are exempted from all hospital charges and persons in indigent circumstances also receive sympathetic considerations.

Pensioners' Medical Services (introduced 1951)—These will cost the Government this year £3,750,000.

The beneficiaries under this scheme number 675,000; they can choose their own doctors—G. P.'s only, the

patient at each consultation signing a voucher. The fees paid by the Government is about 40 per cent less than the usual fees.

In each State there is a medical services committee, the members of which are selected from the nominees of the B.M.A. in Australia, whose function is to investigate apparent abuses by doctors of the Pensioner Medical Service.

Pharmaceutical benefits to pensioners—Cost £2,555,000. This is in addition to the free supply of life saving and disease preventible drugs to all citizens.

Tuberculosis allowance—Total cost is £8,000,000 per annum. The death rate from T.B. has been reduced from 23·3 per 100,000 of population in 1949 to 6 in 1959. In addition to grants made to the States for erection and maintenance of T.B. hospitals and re-imbursements for their expenditure on chest surveys (which is compulsory), to encourage T.B. sufferers to refrain from working and to undergo treatment and to minimise the spread of the disease and to promote better treatment, special T.B. allowances are paid to T.B. sufferers and their dependants on a very liberal scale, viz. :

Patient without dependants £5-12-6d. a week (reduced to £3-10-0d. when maintained free in an institution), with dependant wife £9-10-6d. and 10 shillings a week for each dependant child; this is additional to child endowment.

The average number of persons needing to draw this T.B. allowance declined from the peak of 6,712 in April, 1952, to 2,172 in March, 1958.

Free milk scheme for children.—Since 1950, ⅓rd pint of milk per day is supplied free to every school child up to 12 years of age. The cost involved is £2,750,000 per annum.

Other commitments of the Commonwealth Government—

(1) Grants to States for capital expenditure on mental hospitals—£1,250,000 per annum.
(2) Subsidising the Royal Flying Doctor Service—£237,000 per annum.
(3) Contributing to the cost of maintaining the blood transfusion service of the Red Cross.
(4) Providing and maintaining a medical and hospital service in Northern Territory of Australia and a hospital at Canberra.
(5) Fostering medical research.
(6) Production and free distribution of Salk vaccine.
(7) Paying maternity allowances. The allowance is £17 where there are no other children.
(8) Providing child endowment—a sum of 5s. a week for the first child and 10s. for each other child up to the age of 16.
(9) Repatriation benefits to ex-Servicemen and their dependants through local practitioners.
(10) Quarantine Services.

State Public Health Legislation and Administration—These cover

(1) Public health,
(2) T.B.
(3) Industrial medicine,
(4) Maternal and child welfare,
(5) Medical inspection of school children,
(6) Mental hygiene,
(7) Scientific and laboratory services, and
(8) Hospitals.

Hospitals

All public hospitals are controlled by a branch of the Department of Health or by a special board or commission. These hospitals are staffed, for the most part, by visiting medical officers appointed in an honorary capacity. In Queensland, however, visiting medical officers are paid a salary. The honorary staffs are precluded by law from receiving payment for services rendered to patients in public wards, but fees are charged to patients in private and intermediate wards, and an everincreasing number of the population is making use of the "pay beds". Again, no charge is made for medical attendances rendered to outpatients, although the hospitals usually make a charge for the use of the hospital facilities.

With the exception of Queensland and Tasmania, there is no free hospital accommodation provided by the Government, except where genuine hardship is proved, when full payment for public ward accommodation is not pressed.

Except in Queensland and Tasmania, a means test, liberal in its scope, is applied for admission into public wards. Charges for public ward accommodation vary from State to State, but in New South Wales the fee is 12 guineas per week, although the average cost of maintaining a bed in a public hospital is about £30 a week.

Most public hospitals also provide a limited amount of private (25 guineas per week) and intermediate (18 guineas per week) accommodation.

The Queensland Government has used and is using State lotteries for financing their hospitals of different types.

(a) Two large metropolitan hospitals staffed by a part-time classified visiting staff, with a large number of full-time medical officers, often of considerable seniority, and specially in the departments of casualty, diagnosis, radiology, radiotherapy, pathology, anaesthetics and traumatic surgery.
(b) A series of base hospitals with in-patient and out-patient departments, in large country towns. Here, the medical superintendent has both theoretical and practical control of treatment though registered specialists are being attached to them on a part-time basis as they become available to the community.
(c) A large number of small public hospitals staffed by a full-time or a part-time medical superintendent, and sometimes a small number of junior resident doctors. In most cases, the local private practitioners have only limited access to the facilities of these hospitals, and they do not take part in the case of the public ward patients. Large number of intermediate beds are being

made available within the public hospitals where the patients are cared for by their private practitioners on a fee for service basis.

ORGANISATION OF THE MEDICAL PROFESSION

The medical profession in Australia has, since 1880, been organised as part of the B.M.A. and more than 96 per cent of practitioners are members of the six State Branches of the B.M.A. in Australia, each branch having practically complete autonomy. The membership is as follows:

N. S. Wales 4,127; Victoria 2,947; S. Australia 974; Queensland 1,300; Western Australia 705; Tassmania 260.

The Federal Council of the B.M.A. in Australia is composed of 15 members elected by the Branches, and generally speaking, acts for and on behalf of the Branches in matters affecting the profession in Australia as a whole, the Branches dealing with State matters. The association is non-political, but cannot escape some contact with politics. Its attitude is quite simple; if a political party advocates a form of medical service which the profession approves, it supports that party's policy; if any political party advocates a medical service which the profession considers is against the interests of the people and the profession, then the policy is opposed, and there its excursion into politics begins and ends.

Recent surveys have shown that the medical practitioners as a group, receive a more favourable income than any other profession in Australia, and it is also true that they enjoy good social status in the community.

NOTES AND NEWS

World Health Assembly Adopts Budget

The 88-nation World Health Assembly ended its 12th session on 29-5-59 after approving resolutions for the eradication of malaria and smallpox and for co-ordinated research into the causes of cancer and heart disease.

The Assembly approved a budget for 1960 of $16,900,000 (about £6 million), including a special fund of $500,000 (about £173,500) for an intensified programme of international medical research.

The cancer and heart disease programme approved by the Assembly aims at co-ordination through WHO statistics from various countries to discover why coronary heart disease exists virtually only in high industrialised countries, and why a certain form of cancer may be prevalent in one part of the world while practically unknown in another.

WHO Call to Wipe Out Smallpox

A recommendation to the World Health Assembly that national campaigns for the eradication of smallpox should be launched in whatever country the disease was still present was made by the Programme and Budget Committee of the Assembly in Geneva.

On behalf of the U.S.S.R. it was stated that the country was prepared to assist parts of Asia with vaccine production and by providing supplies and specialists.

It was agreed, the Committee said, that smallpox was an anachronism since vaccination against it had existed for more than 150 years and an effective vaccine was now cheap. Yet during the past year there had been more than 200,000 cases of smallpox in Asia and a few had been introduced into Europe, causing outbreaks.

WHO to Provide Water Supplies Around the World

The Twelfth World Health Assembly meeting in Geneva (12-29 May) had approved a spearhead programme for community water supply in which WHO will assist Member Governments with technical and advisory services. This was recognised to be an important measure for the protection and improvement of health and indispensable for economic and social development.

New Approach to Leprosy

The conventional way of dealing with the problem of leprosy by isolating the patient from his family and placing him in a laprosarium has been replaced in some Latin American countries by a system of out-patient treatment and home prophylaxis.

The new approach has met with the wide acceptance of the medical profession, government authorities and patients. It has resulted in the closure of many leper colonies, led to better care and beter prophylactic measures among the members of the patient's family and brought about economic savings to the Government.

This was mentioned in the course of talks by two U.S. experts on medical research, Dr. Kenneth O. Courtney and Dr. Paul E. Thompson, both of Parke, Davis and Company, before a fully representative gathering of the medical profession in Bombay recently.

Incidence of Leprosy Rises Alarmingly

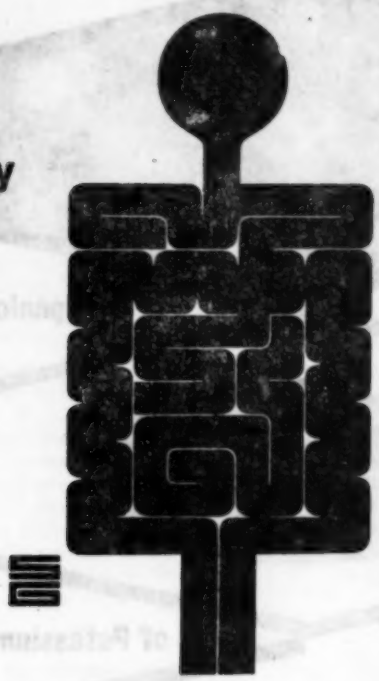
A recent sample survey conducted by the Mine's Board of Health, Asansol, shows an alarming increase in the incidence of leprosy in this area. The number of people found suffering from this disease is 5,285 of whom 1,068 are in a highly infective state.

The most appalling feature is that one of every 100 boys in schools was found suffering from leprosy. The incidence among miners is 0·4 per cent.

The survey was rather sketchy and not all villagers could be properly examined. It is believed that the actual number of lepers in this sub-division must be more than 15,000. The number found in Asansol town itself is 711 and in Raniganj 278. Many of them are beggars, 293 were found among the steel workers.

The disease is spreading due to inadequacy of facilities for segregation and treatment. The worst affected areas are in Jemari and Laigunj on the borders of Bihar where 2 per cent of the villagers were found to be lepers.

The Mines Board of Health was entrusted to look after the work. A sum of Rs. 70,000 is spent by the central board at Asansol and a part of it is raised as



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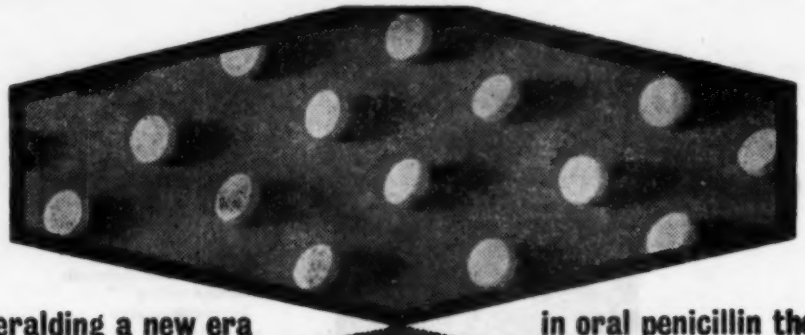

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India Signs Pact with Russia

An agreement on co-operation between the Soviet Union and India, in the building of State establishments to manufacture medicine, medicinal preparations and surgical instruments in India, was signed in Moscow for the Soviet Government by Mr. Skachkov, Chairman of the State Committee for Foreign Trade Relations, and for India, by Mr. Manubhai Shah, Minister of Industry.

Self-sufficiency in Drugs

The remarkable progress India had made towards the goal of self-sufficiency in drugs and pharmaceuticals was emphasised by Mr. D. L. Amore, President of the Pharmaceutical and Allied Manufacturers' and Distributors' Association, Ltd., in Bombay, recently.

Speaking at the annual general meeting of the Association, Mr. Amore said that India's production was valued at Rs. 62 crores during 1958. This was nearly double the output in the previous year. The Government expected that by the end of the Third Five Year Plan, the production would be of the order of Rs. 150 crores.

Medical Aid for Workers' Families

The Employees' State Insurance Scheme will now cover the families of insured workers in Delhi.

So far only insured workers were entitled to medical treatment under the scheme. The extension of the scheme to workers' families will cover an additional 2,00,000 people in Delhi. The number of insured under the scheme is about 67,000.

Fifty beds are reserved for insured workers in Irwin Hospital and 30 beds in the Silver Jubilee Tuberculosis Hospital. Two ambulances have been provided for emergency cases. Recently, facilities for special treatment in medical, surgical, eye, ear, nose and throat cases have also been provided in Irwin Hospital.

Specialists in T.B., gynaecology, pathology, radiology, skin and venereal diseases are to be appointed shortly. There are nine wholetime and an equal number of part-time dispensaries with 23 medical officers and other medical staff.

Research Facilities in Andhra

The Andhra Pradesh Government have decided to expand the existing laboratory facilities in the Central Laboratories at Hyderabad with a view to developing it on the lines of the King Institute at Guindy.

The laboratories will undertake biochemical, bacteriological, and pathological examinations, water, drug and food analysis. It will also be a centre for research and teaching.

It is proposed to set up two regional laboratories at Warangal and Guntur, eight district laboratories at a cost of Rs. 20 lakhs. Regional laboratories have been established already at Visakhapatnam and Kurnool.

Besides providing two sets of basic laboratories equipment for the regional diagnostic laboratories at Kurnool and Guntur, the UNICEF will assist in the development of six district laboratories at Kakinada, Eluru, Anantapur, Nizamabad, Karimnagar and Warangal. It will provide certain items of imported equipment of the value of Rs. 2,000 to each hospital in the State. It will supply a smaller set of laboratory equipment to the upgrade hospitals to be used for simple Clinical Public Health Examinations, and 109 jeeps to the primary health centres.

New Units to Combat Malaria

The Union Health Ministry has allotted 160 hypo-endemic units under the national malaria eradication programme to various States. They are expected to start functioning during the current financial year.

During 1958-59, 225 units were working against 230 units allotted to various States. These units afford protection to a population of about 21·4 crores.

The total estimated cost of the eradication programme during the three years of the Second Plan is estimated at Rs. 43·57 crores. Of this amount, the Union Government's contribution will be Rs. 10·09 crores and the State Government's Rs. 15·19 crores.

The balance of Rs. 18·29 crores will be in the form of foreign exchange to be made available by agencies like the United States Technical Co-operation Mission and the World Health Organisation.

During 1958-59, the Union Government spent Rs. 1·81 crores. According to the reports from some State Governments received up to December, 1958, they spent Rs. 1·52 crores. In this period TCM supplied material and equipment worth Rs. 4 crores and the WHO insecticide valued at Rs. 69·4 lakhs.

Two fellowships and one technician were provided by TCM, while WHO met part of the expenditure on the inter-State regional malaria eradication organisations, advisory teams and two fellowships.

During the last financial year, 213 medical officers were trained at the Malaria Institute of India, Delhi.

REVIEWS

A Textbook of Bacteriology—By R. W. Fairbrother. William Heinemann Medical Books Ltd., 8th Edition, 1959, pp. 502, size 5½"×8½", price 25s. net.

The eighth edition of the book, published within 22 years of its first appearance, bears an eloquent testimony to its popularity. Indeed, so much information has been condensed within a few hundreds of pages that it would be considered a feat by contemporary writers of text-books of bacteriology. This brevity, however, makes the presentation essentially didactic, and, hence, the book is full of statements divorced from the evidence on which they are based. Unfortunately, there is seldom anything axiomatic in biological science. Nevertheless, it would undoubtedly be found to be useful to those for whom it is written.

In this new edition, the chapters on chemotherapy and the viruses have rightly received extensive attention. A student in the tropics would have, however, liked that the chapters on ingested infections had received more attention. Of course, it could not possibly be done in a general text book of this kind. On the whole, this book could unhesitatingly be recommended to the beginners of medical bacteriology.

Etiology and Treatment of Leukemia—Edited by W. J. Burdette, C. V. Mosby Company, St. Louis, 1958, 9¼"×6½", pp. 167, price $4·00.

The present volume records the proceedings of the first Louisiana Cancer Conference originating as part of the professional educational programme of the American Cancer Society. The volume is divided into two sections: the first devoted to the aetiology and diagnosis and the second to treatment of leukaemia. A comprehensive summary by the editor is followed by an extensive and up-to-date bibliography.

The information included in this book will interest workers engaged in clinical and experimental aspects of leukaemia. The discussions at the end of each chapter have been very appropriate in presenting a clear picture of many complex problems. The editor appears to have succeeded in presenting some of the spontaneity and flavour which marked the animated discussions of the various participants.

Leitfaden der Blutmorphologie: Manual of Blood Morphology - Précis de Morphologie sanguine—Von L. Schudel, Zürich. English and French translation by von J. Meng, Zürich. 9., verbesserte Auflage, 1958. 54 Seiten, 18 farbige Tafeln, Gr.-8°, (Georg Thieme Verlag, Stuttgart), kartoniert DM 14.80 (Staffelpreis ab 20 Expl. DM 13.30).

The fact that this handy guide, presented simultaneously in German, English and French, has been in use for the last 22 years and has reached its 9th edition is proof of its usefulness. Written and illustrated by an experienced technician working in one of the foremost haematological laboratories, it is sure to satisfy all needs and to answer all questions of day-to-day haematological work. The technical instructions are clear, precise and exhaustive. The 18 colour plates are beautifully produced and depict faithfully every phase of normal as well as pathological blood morphology. Although recently several manuals for the haematology technician have been published, Miss Schudel's lightweight volume ranks among the best and should be a welcome addition to the handpicked tools of everyone concerned with blood counts and blood pictures.

Die Blutgruppen des Menschen (Blood Groups in Man, 3rd edition)—Von R. R. Race, PH.D. und R. Sanger, PH.D., B.SC., London. Mit einem Vorwort von Prof. Sir Ronald Fisher, Cambrige, Deutsche Ubersetzung von Prof. Dr. Prokop, Berlin, 1958. XX, 372 Seiten, 31 Abbildungen, 107 Tabellen, Gr.-8°, (Georg Thieme Verlag, Stuttgart), Ganzleinen DM 39.80.

The Blood Groups in Man—By R. R. Race and Ruth Sanger (in German).

This book does not need any introduction or recommendation. It is well known to and highly appreciated by everyone interested in this subject, being a translation from the English original. As it was published after the 3rd English edition of 1958, which is the last so far, it is fully up-to-date and should be as welcome and useful to the German speaking medical profession, to biologists and geneticists as it is to those who are reading it in English.

NOTICE REGARDING INTERNSHIP/RESIDENTSHIP IN AMERICAN HOSPITALS

INDIAN MEDICAL ASSOCIATION : : CENTRAL OFFICE, DELHI

The members of the Indian Medical Association who are desirous of taking up appointments as Internes, Assistant Residents and Residents in American hospitals after January, 1960, are informed that according to the decision of the Educational Council for Foreign Medical Graduates, 1710 Orrington Avenue, Evanston, Illinois, U.S.A. they must have passed "The American Medical Qualification Examination". This examination is held in India at four centres, viz. Delhi, Bombay, Calcutta and Madras. *The next examination is due to be held at the above mentioned four Centres in India on* Tuesday, September 22nd, 1959. *All applicants have to be approved by the Educational Council for Foreign Medical Graduates before the candidates are allowed to sit for the examination. It is, therefore, requested that the candidates who are desirous of appearing at this examination, should obtain the application forms etc. immediately from the I.M.A. office (Hanging Bridge, Faizbazar, Darya ganj, Delhi 7) and return the same duly filled in by 10th July, 1959 latest for onward transmission to the U.S.A.*

It may be mentioned that this examination will be held in all the countries from where candidates apply for such appointments in American Hospitals.

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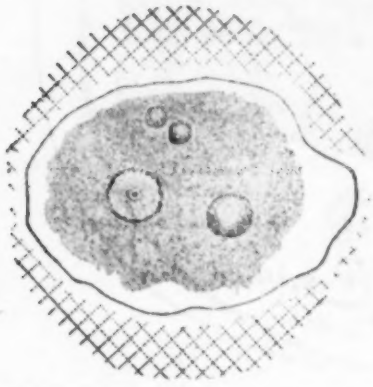

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XVIII BENGAL PROVINCIAL MEDICAL CONFERENCE, 1959, DOOARS

The 18th Bengal Provincial Medical Conference was held at Banarhat, in the District of Jalpaiguri on the 7th and 8th March, 1959. Dr. B. P. Tribedi presided.

Welcoming the delegates and guests, Dr. N. G. Ghatak, the Chairman of the Reception Committee, referred to the health conditions of the district. He said: "Leprosy is spreading. There are cases in every garden especially among Madasia labourers. Cholera and Typhoid fever are rare and Kala-azar is hardly a menace now. Tuberculosis is a scourge as elsewhere in West Bengal." He suggested that there should be a Mobile B.C.G. Team and X'ray unit as also a Mobile Eye Unit in different sectors of Dooars. He spoke in support of Family Planning and described the service conditions of the tea garden doctors as also the status of the Licentiate doctors. He requested the members of I.M.A. present in the conference to take into consideration the conditions of the doctors in the Dooars.

Dr. B P. Tribedi, the President of the Conference, in course of his address said:

"I do not propose to dwell on the various aspects of the existing problems of the medical profession which are general in nature being focussed in every Presidential Address of the different state conferences, but I shall confine myself to certain aspects which I consider to be very important, as it concerns us in West Bengal.

The first problem that strikes me is the tremendous deterioration in the medical administrative sphere and, consequently, its impact on medical education and relief. In my 29 years of service with the government, I have passed through various regimes—British, Indo-British, Muslim League and Congress. During the administration of the first two viz., British and Indo-British regimes the usual disciplinary morale in the administration was fairly maintained, of course, there was no national outlook in those days. During the Muslim League regime, no good work was possible because the whole administration was geared into one object i.e. Moslemisation of the services from a chaprasi to the highest officers.

Next came the Congress regime after the Independence. This was the brightest period in my career as a government servant; I had the full liberty of expressing my opinion and every facility was given to the heads of the departments of the Calcutta Medical Collegt to select their own men sitting in a committee with the Principal and one or two other senior members of the staff. The result can easily be guessed by the performance of the department which was in my charge. Numbers of M.D.s and D.Phils. emerged. In the sphere of scientific contribution, it attained a very high level.

In this context it pains me very much to see the state of affairs that is prevailing at present and I see an image that resembles the Moslem League regime. The heads of the departments are now nothing but post offices. The whole power has been concentrated into the Writers' Buildings. Officers are posted in the departments not only without prior consultation but even without the prior knowledge of the Professors or the Principal. Even Laboratory Assistants and Technicians are being sent out from the Writers' Buildings. A central supply store has been created and all the requirements are to be obtained from there. In the teaching and scientific institutes this system if not properly organised and run, results virtually into a collapse of even day to day work. Those who run the stores cannot be expected to know the urgency and nature of the work; so they take it as the usual office work and everyone knows how government offices work. The samples of the articles that are chosen usually differ materially from what are supplied and refusal by the heads of the departments to accept these, means delay of another 3 months or so. This results in deadlock in the hospital because the supply will not come. The students have got to buy their slides and cover slips to work in the classes. In the hospitals soap and towel are not available. But who cares? It is high time that the authorities either run their stores with proper alertness and efficiency or leave the supply with the departments concerned. The sum total result of these centralisation is that the heads of departments are without any initiative and they simply carry on the routine work, just saving themselves that no trouble happens. What can be expected in this atmosphere?

Under the aforesaid circumstances the administrative heads have either become frustrated and become simply post-offices or are developing an unhealthy slavish mentality, and their whole idea is to fall in line with whatever the Director of Health Service directs them to do. They do not even dare to point out any defect in the directives even if they feel so, least they incur the displeasure of the Director of Health Service. This is a serious situation. To my mind the rational thing is to give all the powers to the heads of the departments with the usual administrative brakes, and if anyone is found wanting to deliver the goods he should be removed. This is how a democratic structure operates. The present tendency of the administration is just a replica of a totalitarian state under a dictator.

In the sphere of medical education of which the Calcutta Medical College serves as a model, there is also a pitiable condition. If you compare the Presidential Address of the Bishnupur Conference with the Principal's Address on the last foundation day of the Medical College, you will find it is the same story, viz., owing to the breakdown of the machinery an appalling state of affairs is existing in the sphere of medical education. This needs repetition even if you feel bored. The new scheme that the W. B. Government are contemplating to implement will be another flop like the so-called "new set-up" which they introduced 5/6 years before. One single instance I shall give you. In the new scheme the pay will be attached to the person and not to the post. This is a novel condition in which the head of the department may get less pay than one of his subordinates because of the various complications in

DR. N. G. GHATAK
CHAIRMAN, RECEPTION COMMITTEE

the fixation of emoluments of the officers. In the new scheme such a regimentation has been brought in that it looks like an army. Such regimentation in medical education and research can never fulfil the ideal for which they are created.

Next I go into the question of medical relief in the rural areas. On various occasions we in the I.M.A. approached the various steps in the ladder of the government machinery to include the rural practitioners in any programme that the government may decide to implement. In one of the discussions with the Director of Health Service, he categorically stated that he will not bring in the rural practitioners because they will be involved in the local politics. I ask you why then the W. B. Government have decided the various Panchayet systems in the country giving such large powers to the local people? Will they not be involved in local politics? The ministers and we all know very well that they will be and in many cases the whole object of the local self-government will be violated by the local politics, but that does not deter the government to withhold such powers because the government which is in power now do believe in the democratic way of life with all its advantages and disadvantages. Giving power to the people is bound to retard the progress but this is the way in which democracy works to raise the people up to the standard; those who are intolerant for this delay are misfits in the present set-up. Those who do not want to give power to the people of however low standard they are, they may be right according to their own convictions, but they will be more suited for a pattern which has been brought into being in Pakistan, but they are unsuitable to operate, implement and administer in a government which is pledged to a democratiic set-up.

It was a good thing that the Chief Minister in a recent interview, which we had with him, asked us to work out a plan for a subsidised medical practice in the rural areas and we are working on this, but I am not at all enthusiastic because when this scheme will be submitted to him, it will go to the officers for examination. I feel sure from past experience that it will be totally turned down because some of the officers never believe in the co-operation of the public in any administrative matter. I say "from past experience", because when the Calcutta Branch of the I.M.A. through a press conference brought out the appalling state of affairs in the Calcutta hospitals, the press gave it a wide publicity, the Chief Minister wanted us to co-operate with the Director of Health Service whom the Chief Minister asked to evolve a plan. The Director of Health Service made a scheme and we whole-heartedly co-operated with it, but very soon we found that there was no sincerity of purpose behind it. The scheme was only made in a way so that it does not work. When we came out from the committee we wrote a letter to the D.H.S. and sent a copy to the Chief Minister explaining our point of view why we could not continue any longer. But nothing has been done since then.

The Chief Minister of Orissa, Dr. H. K. Mahatab during the last annual conference of the I.M.A. in Cuttack, said that the I.M.A. and the Government should work together. In a recent press report from Bombay I read that the President of India wanted the medical profession to help the government in national reconstruction. But the way in which the medical department of the W. B. Government is running, there is no scope for any co-operation from the profession and it is acting in a typically bureaucratic manner. Sir Nil Ratan Sircar, Dr. B. C. Roy, Dr. K. S. Roy and Capt. Phani Bhusan Mukherjee fought many battles with the white bureaucracy and, I can assure you that we, who have at the present moment got the legacy from them, will not be found wanting to fight the brown bureaucracy. We will fight because we feel that medical relief to the people and medical education are in jeopardy. Day to day administration has reached such a low level that those who do not know cannot imagine the state of affairs. A permanent government officer was transferred to a hospital and his transfer was gazetted and when that officer went to that hospital he found there was no such a thing as hospital but only a jungle. We have repeatedly requested the Chief Minister to hold an enquiry—even through a man whom he trusts and who is impartial and free from politics,—and we told him that we shall place all the facts before him and we requested the Chief Minister at least to give us a chance to prove ourselves to be in the wrong. I travel throughout India. In various medical forums and in other spheres I hear why things in West Bengal are not in ideal conditions when Dr. B. C. Roy is there. I even ask this question to myself. I have got the answer to this paradox but I do not want to discuss it here.

No one can deny that the judgment and the decisions of Dr. B. C. Roy are of highest order, yet how is it that in a State where he is everybody, these serious state of affairs do exist? All the information do not reach him. If some of these reach him at all he is persuaded to believe that these are only from a band of critics who are without any constructive methods or way of thinking. After the ugly incident that took place in the Sambhunath Pundit Hospital, all that the Chief Minister did was to appoint another officer and he has been designated as JOINT DIRECTOR OF HEALTH SERVICES. I understand that the new incumbent will be in charge of the administration and the pre-existing D.H.S. will be in charge of planning. I shall not be surprised if we hear in the near future that another post has been created whose function will be to decide which file will go to the planning section and which one will be for the administration; and this will be needed for smooth working. I shall ask the Chief Minister if he is really satisfied that this creation of a new post will meet the needs. To the master clinician I shall have the audacity to say "Sir, you have prescribed a medicine without following the cardinal principle which is followed by every diagnostician viz., what is it and

where it is?" I am asking the Chief Minister whether he is really satisfied that this creation of a new post will meet the demands of the situation. You might wonder how silly of me to ask such a question. When you get an important article from the market, you look at the brand; if it is from a standard brand you accept it easily. But if you have any doubt about the genuineness of the brand you have got to make more enquiries. I am a purchaser in the medical set-up in this state. But whenever I find anything with a trade mark as Dr. Bidhan Ch. Roy's decision, I am unable to accept it straightway because many things emerge from the Writers' Buildings with the trade mark as Dr. Roy's which are not really Dr. Roy's but passed as his. So, we have got to see whether these are genuine or spurious before we accept it.

Now I shall put before you a very important subject which is intimately connected with our very existence viz., the problem of increasing population. No amount in the increase of food, no amount in the improved method of cultivation can cope with the tremendous annual increase in population in our country. Something must be done to restrict this increase and "Family Planning" is the only answer, although there are many difficulties involved in it. I would request all members of our profession to propagate this idea of Family Planning in every sphere they move so that when the Family Planning scheme is taken up by the government, people may be found ready to accept it without any sense of revolt against it. I suggest that the Bengal Provincial Branch in consultation with the I.M.A. Central should evolve a formula which every medical man will be asked to follow which will be educative in nature and will go in preparing the ground for the Family Planning scheme when implemented.

Next, there are some vital problems which, I feel, I should lay stress on viz., the condition of the colliery and the tea gardens doctors. From the address of the Chairman of the Reception Committee you have come to know about the miserable condition of the tea garden doctors. This has got to be remedied and in this, I feel, that the Indian owners of the tea gardens have got special responsibility, I appeal to them to take the lead.

Finally, we claim that the I.M.A. have got tremendous responsibility in the maintenance of the health of the people and we also claim that the government should work in unison with us. It is in this context I must emphasise that we must be fit for it. If any time the government approaches us for our opinion in any particular matter we should be able to give a fair and just opinion and it is imperative that we should not be carried away by any personal or group consideration. I have thought it proper to sound a note of warning. While discussing the D.H.S.'s scheme in the I.M.A. forum with the various specialists and servicemen etc., I noticed that during those discussions there had been a tendency in some quarters to impose some decisions based on group interest. We must steer clear of this sort of cross-currents. Another point I would like to bring before our professional brethren that we must keep the ethical standard of our profession to the highest level. Our profession demands it in our relationship with the sick and the society. In this matter I must refer to the constant complaint that we hear about issuing of false certificates by doctors. I am one of those who do not believe in keeping quiet because it will amount to washing our dirt in public, and I am prepared to take all the criticism that I may get for speaking the truth. It is my firm conviction that the majority of the medical profession is free from this malady, but a few amongst us freely resort to issuing false certificates thereby making the whole profession a laughing stock. It is the bounden duty of every medical man to hound out these "black sheep" of the profession and restore the dignity that the profession deserves. Integrity and unity that is all what is needed."

DR. B. P. TRIBEDI
PRESIDENT OF THE CONFERENCE

The following resolutions were passed at the Conference

1. *On Non-availability of Narcotic Drugs* : This Conference views with great concern that there are great difficulties for the practitioners to have their proper supply of Narcotic drugs like Morphine and Pethidine Hydrochloride for their professional use, due to the policy taken by the Government of W. Bengal for allotment of these drugs.

This Conference feels that the procedure practised is a great impediment on the way of immediate relief in the alleviation of the suffering of the sick, particularly in rural areas and therefore urges upon the Government to implement such procedure whereby supply of Narcotic drugs like Morphine and Pethidine be easily available even to the practitioners of the remote villages.

2. *On Licentiate Medical Officers in the West Bengal Health Service* : This Conference views with great concern the service condition of the large number of Licentiate Medical Officers in West Bengal Medical Service. They have received scanty consideration of the Government up to this date. These medical officers have had to forego many amenities and comforts of life in order to earn their livelihood. This conference also understands that a very large number of them is still temporary and has not been included in the unified cadre of service.

This Conference reiterates the demands made by the Indian Medical Association for licentiate medical officers in West Bengal Medical Services through various communications submitted to the Government from time to time. The Conference further urges upon the Government to take immediate steps in formulating their policy for betterment of the service condition of this section

of medical men, as suggested by the Indian Medical Association.

3. *On Re-naming of Hospital* : This Conference disapproves the action and the method of the Government of West Bengal by which they changed the name of the Presidency General Hospital to S. S. K. M. Hospital, Calcutta, by accepting a donation of a sum of Rs. 17,00,000 (seventeen lakhs).

This Conference is of opinion that this method of changing the name of a well-known and reputed Institution by accepting donation is a dangerous procedure which may bring in complications in future.

This Conference considers that the Government of West Bengal acted very unwisely in accepting the donation on the terms and conditions of the donor, when the P. G. Hospital has been built up by huge sum of money out of public funds and efforts of the Government.

This Conference, therefore, urges upon the Government of West Bengal to rename the Institute as Post-Graduate Hospital immediately even if it necessitates the return of the money to the donor.

This Conference further requests the Indian Medical Association, Bengal Provincial Branch, to formulate a principle for changing the names of different hospitals.

4. *On Employees' State Insurance (Medical Benefit) Scheme* : The Employees' State Insurance (Medical Benefit) Scheme came into operation in the State of West Bengal in 1955 after prolonged efforts, but up to this date only an insignificant minority of labour has been covered up. Neither the labourers nor the medical practitioners of this State have been fully benefited due to non-implementation of the scheme throughout the State.

This Conference envisages that the E.S.I. (Medical Benefit) Scheme, if implemented in proper way throughout the State, will be beneficial to the workers particularly in getting medical relief and to the medical profession in general, in the face of acute economic distress in the State of West Bengal.

This Conference is of further opinion that with the rapid industrialisation of the State, the industrial workers have become the key persons of the Society and as such, a comprehensively improved E.S.I. (Medical Benefit) Scheme with its extension to the families of the industrial workers and compulsorily to all industries and to all industrial areas should form the first phase of such a Nationalised Health Programme.

This Conference, therefore, categorically demands that—

(a) The E.S.I. (Medical Benefit) Scheme should be extended as early as possible to all industrial areas in the State of West Bengal. The process of extension of the service has been painfully slow and brooks no delay.

(b) The Government should prepare an advance planning for extension of this benefit to the workers in rapidly developing areas throughout the State so that there will be no delay for the labour to get the benefit as soon as a new industry is built up in this State, as in Durgapur Steel Project etc. etc.

(c) The inclusion of families of the workers in the E.S.I. (Medical Benefit) Scheme should be implemented as early as possible. In this respect, the State of West Bengal is lagging behind other States of India like Bombay.

This Conference further urges that the Government of West Bengal should agree to pay an additional sum per capita as has been agreed by the Government of Bombay while including the families in the scheme. This Conference views with great concern that the Government of West Bengal is reluctant in this respect on the plea of lack of hospital beds, though the provision of medical benefit to the family does not include the provision of hospital service.

5. *On Nationalisation of the Health Services* : Whereas this Conference considers that Nationalisation of the Health Services under a comprehensive Nationalised Health Programme should be the ultimate goals of our welfare state of West Bengal,

Whereas it is further considered that such a total nationalisation may not be possible in the present financial condition of the State and the Central Government,

this Conference is of considered opinion that it should be appropriate to divide the programme of nationalisation in different categories of the population—the industrial workers, the school children, the college students, persons of low income group etc. etc.

This Conference is of further opinion that with the rapid industrialisation of the State, the industrial workers have become the key persons of the Society and as such, a comprehensively improved E.S.I. (M.B.) Scheme with its extension to the families of the industrial workers and compulsorily to all industries and to all industrial areas should form the first phase of such a Nationalised Health Programme.

In view of the fact that the school children form the foundation upon which the Nation is based, this Conference considers that a comprehensive School Health Programme should constitute the second phase of the programme of nationalisation, and should be controlled and co-ordinated by a National School Health Board consisting of representatives of the Education and Health Department of the Government of West Bengal, Municipalities, Board of Secondary Education, Head Masters and Teachers Association, Medical and allied Associations, Association of Physical Culturists, the Central Government and others connected with the school-health work.

This Conference therefore urges upon the Government of West Bengal to take immediate steps to plan such a programme of phased nationalisation well in advance and demand the inclusion of the first two phases as mentioned above in the next Five-Year Plan of the country.

This Conference assures the assistance and active co-operation of the Indian Medical Association in the planning and execution of such a programme of nationalisation.

6. *On Special Pay or Risk Pay for Doctors working in the T.B. Hospitals* : A special pay has so long been allowed by the Government to the doctors in Government service working in T.B. Hospitals considering the risk of the professional hazards undertaken by them. The present scheme published by the Government of West Bengal has not considered this pay altogether. Eminent workers in India and abroad have opined in favour of such special pay, so that the T.B. workers may maintain good standard of living and have better diet in order to have a fair resistive power against the disease. The withdrawal of such allowance will mean substantial loss of emolument and will cause handicap to the workers. This will inevitably compel them to lower their standard of diet and living and they may be even risky for other men. The Government has already introduced allowing tiffin at 20 np. per day and in some cases Rs. 5/- per month for maintenance of health to a section of workers (iv grade) in the T.B. Hospitals, from whom they have withdrawn the risk allowance. This benefit however has not been extended to doctors though their T.B. allowances have been withdrawn.

It is learnt that provision of free treatment of victim to the disease is kept in the new scheme. This cannot be a fair reason to abolish the special pay. In a free country, which envisages a welfare State, every citizen expects free treatment not to speak of the Government

servants who may contact the disease while discharging their duties to the State. Surely it cannot be the intention of the Government that the employee should have tuberculosis first and have free treatment later on.

This Conference urges upon the Government to revise this clause and insist on the Government to extend the previous benefit to the doctors working in T.B. Hospitals.

7. *On the Voting Rights of Licentiate Medical Practitioners in the election of Legislative Council of the State* : The voting right in the Graduate Constituency of the Legislative Council have not yet been given to the Licentiates of the State of West Bengal in spite of repeated representation to the Government of West Bengal and the electoral authorities by the Provincial Office of the Indian Medical Association while this right has already been given by other States of the Indian Union.

This Conference strongly urges upon the Government of West Bengal and the Electoral authorities to immediately implement the rightful demand of the medical licentiates of this State.

8. *On the Campaign against Doctors and Hospital Staff* : This Conference while re-iterating the resolution "the press campaign against the Hospitals" passed by the 16th Bengal Provincial Medical Conference in May, 1957 views with great concern on increasing tempo of press campaign against some section of the medical profession particularly attached to the hospital. This situation has got a countrywide repercussion and leads to the deterioration on the confidence and mutual relation between doctors and patients and undermines the noble medical profession in the eyes of the public.

This Conference therefore urges upon the Government of West Bengal to set up a public Enquiry Commission as has been suggested from the Indian Medical Association—Calcutta Branch to bring to book the real culprits if there be any, and to rectify the defects in the administration of medical service in the State.

9. *On Improvement of Rural Health and Condition of Rural Medical Practitioners* : The Indian Medical Association has for a long time shown its great concern about the miserable economic plight of the medical practitioners due to various socio-economic factors. The Association has drawn the attention of the Government of West Bengal on various occasions but notes with dismay that uptil now no tangible result has been achieved.

This Conference believes that although the incidence of morbidity is quite high in the rural areas and although there is scanty effort on the part of the Government for betterment of the people regarding improving the positive health approach of the Community, the vast number of medical practitioners serving in the rural areas are facing economic distress.

This Conference strongly feels that there should be a comprehensive scheme for improvement of the community health and all the medical practitioners in the rural areas should be gainfully utilised in implementing such a Scheme. Establishment of the revised rural health scheme of the Government of West Bengal by dividing the whole State into various National Development Blocks, is a new move which we welcome in principle. In this respect this Conference urges upon the Government to utilise the Services of the medical personnel in the rural areas under these National Development Blocks in a more comprehensive way. The Planning should be such that all the practitioners in a particular area should come under the aegis of the National Development Block and their services may be utilised in various ways—both for the curative and preventive purposes.

This Conference feels that Doctors can be utilised for services on whole-time, part-time and retaining basis and even if necessary a sort of local health insurance scheme in suitable way can also be implemented in these National Development Block units.

Appointment of a few whole-time doctors in the primary and secondary medical centres will not be able to cover up the rising demand of medical relief required for the people in the rural areas. In order to render optimum medical relief in the locality, public health, school health, maternity health, family planning, domiciliary treatment and services of similar nature have got to be taken into consideration and it will not be impossible to incorporate almost all the practitioners in a locality in such a comprehensive scheme. This conference is confident about the outcome of such a comprehensive plan beneficial to the public and the profession alike.

Further this Conference urges upon the Bengal Provincial Council of the Indian Medical Association to work out a pilot scheme for one individual area in a National Development Block and offers its wholehearted co-operation to the Government in working out such a pilot scheme.

10. *On Service Condition of Medical Officers under Indian Tea Association and Indian Tea Planters' Association* : On reviewing the present position about the grievances of the Medical Officers serving in various Tea Gardens in the State of West Bengal, this Conference feels that the move taken by the Association as early at 1951 should be pursued further so that some effective remedy be obtained as early as possible.

This Conference, in this connection, regrets very much that the authorities concerned could not see their way in responding favourably to the various memoranda by the Association submitted to them and to the various representation made from time to time on its behalf.

(i) Be it resolved therefore that the Central Working Committee of the Indian Medical Association be moved to implement the recommendation of Dr. U. Krishna Rao about possibility of introducing a non-official bill to this effect into the Parliament;

(ii) That the Bengal Provincial Council be requested to arrange for a round-table Conference with the authorities of the I.T.A. and I.T.P.A. and the Government of West Bengal.

This Conference further requests the authorities of the I.T.A. and I.T.P.A. to respond favourably and to co-operate so that an effective solution can be arrived at for the best interest of the profession as well as the authorities of the various Tea Gardens.

11. *On the Present Condition of Medical Relief, Research, Education and Public Health* : This Conference views with great concern the steadily increasing chaos and confusion prevailing in the matter of either enunciating the policy or executing the same in respect of medical relief, research, education and public health in the State of West Bengal and urges upon all concerned to take a serious view of the situation, this Conference further wishes to draw the attention of the public as well as the Government that nothing conducive to the best interest of the Society can be achieved in matter of public health and medical relief or others ignoring the profession and the public, it therefore urges upon the Chief Minister and his Cabinet to arrange for an effective machinery by which a proper and effective liaison can be maintained between the public, profession and the Government.

12. *On Essential Foodstuff* : According to scientific concept, nutrition being the basis of health it is incumbent on all States to arrange for availability of essential foodstuff at a rate within the level of the average buying power of the people. This Conference notes with concern the high price of essential foodstuffs prevailing in the State and urges upon the Government to take immediate steps to bring the prices of essential foodstuffs within the reasonable price.

ASSOCIATION NOTES

Report of the Sub-Committee on Assistantships, Partnerships and Group Practices

INTRODUCTION :

The Working Committee set up this Sub-Committee in its meeting held at Bangalore on 22nd and 23rd December 1957. Quite a good deal of time was taken to get literature on the subject from other National Medical Associations. The British Medical Association was very helpful in advising on various matters connected with it. The system of appointing locums, assistants and taking in partners is very well established in England and after 1948 when the National Health Scheme came into the picture, the British Medical Bureau, an independent profit making concern which worked on commission basis in which the British Medical Association had a major interest, could not function any more because sale of practices where the National Health Scheme work was being done became illegal and therefore a "Medical Practices Advisory Bureau" was started by the B.M.A. as one of its own departments and this Bureau now handles all the work in connection with appointment of locums, assistants, etc. Actually there is no written rules or constitution for guidance and the work is done on the basis of past experiences gained over a number of years.

OBJECT :

It is commonly observed in India that a busy individual practitioner cannot take holidays or leave station either for a visit abroad or for higher studies, because as soon as he does so the clinic has to be closed. A doctor who has been away for any of the reasons given above, would on his return take time to get all his practice back and would thus suffer financial loss. The locum tenens system widely prevalent in the Western countries is almost unknown in this country. If the Association encourages the system then much needed relief cnn be obtained for the busy practitioners, on the one hand and also give employment to the juniors thus increasing scope of employment. At present there is a constant fear that leaving the practice in another practitioner's hand might mean losing patients to him for all the time to come. Similarly it is observed that there is a tendency to pass on practices from father to son to which there can be no objection but the system of engaging assistants or taking partners in cases where the practice has not to be passed on to the son, is also not widely prevalent in the country with the result that a well established practice comes to sudden stop if the doctor goes abroad, takes leave or falls ill or dies. It will be seen that such an eventuality can be avoided if an assistant or partner had been taken in good time. Furthermore the doctor, as he gets older can gradually pass on more and more work to the younger man and enjoy his leisure without being burdened with the practice. It will also be seen that a doctor can do better quality of work if he had either an assistant or a partner because he can pass on routine work to the assistant or the junior partner. The advantage from the viewpoint of the assistant or the junior partner are also worthy of note inasmuch as he does not have to struggle as is usual for a fresher. Furthermore it can become possible for a retiring practitioner to be able to sell his practice to an assistant or a partner by an arrangement lasting over a number of years without causing hardship to the assistant and payments can be made over as extended period on a graduated scale.

DEFINITION :

(1) *Principal*—The practitioner who takes a locum or an assistant is called the "Principal".

(2) *Locum*—A doctor who undertakes to do work for another doctor in his absence for a temporary period is called a locum.

(3) *Assistant*—A doctor who undertakes to assist a "Principal" on a part-time or whole-time basis, either with stipulation of becoming a partner of the Principal in due course or without such stipulation.

(4) *Partner*—A doctor who enters into an agreement of a partnership with another doctor.

(5) *Group Practice*—Cases where a group of doctors work together sharing office premises, staff and other appurtenances.

METHODS :

1. The Association or any of its constituent bodies, either at the Centre or State or Local Branch level shall maintain a list of "Principals" or doctors requiring services of locum or assistants. Their requirement will be indexed. Similarly, a list of junior doctors with their qualifications, days of availability shall also be maintained and whenever a Principal requires the services of a locum, the Association shall arrange to recommend a suitable locum or assistant as the case may be

2. Another alternative method would be, a small classified advertisement can be inserted in a special column of the Journal of the I.M.A.

3. In case of partnership, some method would have to be devised but usually in case of partnership, a preliminary period of trial of assistantship, would be necessary and hence it is covered under 1 and 2 above.

The following general conditions are recommended in cases of the locums and partnerships.

1. No Principal will employ any person who does not hold registrable qualification under the Indian Medical Council Act.

2. All agreements excepting those for short-time locums, would be in writing and verbal assurance or gentleman's agreement, is not recommended.

3. The locums or assistants will receive remuneration at a rate mutually agreed upon between the Principal and the locum or the assistant as the case may be, and the locum or the assistant would be faithful to the Principal.

4. All the moneys earned during the period of tenancy of the locum or the assistant, will be handed over to the Principal and and the locum or the assistant will keep a true record of the work done and the money received.

EXCEPTIONS :

A. An exception may occasionally be necessary for some special type of work to which both the parties could agree.

B. In the case of a medico-legal case arising during the period of tenancy, but the actual attendance in court occurring afterwards, the locum or the assistant would be entitled to receive the fee though he may have ceased to remain a locum.

5. The locum or the assistant would be entitled to any half day or off day as in practice in that locality.

6. Any reasonable amount spent on conveyance in connection with the practice would be the liability of the Principal, unless otherwise specified.

7. The lodging and boarding arrangements may or may not be the liability of the Principal. In larger towns the locum or the assistant would probably have to make his own arrangements but in smaller places it may be arranged by the Principal.

In Case of Assistants only :

i. *Provision for holidays* :—for at least two weeks in a year must be made during the year.

ii. *Provision for sickness* :—if any assistant is prevented from sickness to carry on his duties he should be entitled to payment at least for a fixed period. This period must be clearly laid down in any agreement.

iii. *Period of the duration of the termination of the agreement* :—can either be fixed or renewable. It may be left indefinite when the usual one month's notice is necessary on either side.

iv. *A reasonable restrictive clause as to the practice by the assistant during and after the termination of an agreement* :—The purpose of this clause is to prevent the assistant in engaging in unfair competition with the Principal. Thus it would be essential to put some restricting clause specifying the radius and the time during which the assistant will not start similar practice in that area. However, the clause must not be so rigid as to be unfair to the assistant in starting a practice similar to the practice he has been assisting in but however no restriction should be imposed if the assistant starts a different type of practice i.e. from the general practice to consultant practice.

This purpose can never be achieved by inserting such preventive clause that on violation of the said clause the offending party would be only liable to pay a predetermined sum by way of compensation.

A provision for the settlement of any disputes by arbitration.

Assistantship with a stipulation for partnership :—All the above conditions would apply in addition to that a clause in the agreement detailing the period of trial should definitely be laid down.

Sd./- R. C. GOULATIA. Sd./- B. B. BHATIA.
Sd./- VED PRAKASH (*Convener*).

BRANCH NOTES

ALIGARH BRANCH—A meeting of the branch was held on 7-4-59. Dr. B. R. Shukla presided. Eighteen members were present. The World Health Day was observed. Dr. Satnam Singh spoke on Mental Health. Routine business was transacted.

BENGAL PROVINCIAL BRANCH—The 23rd annual report of the branch (October 1957—September 1958), shows that one emergent meeting, 2 ordinary meetings and the annual meeting of the Bengal Provincial Council were held during the year. Three special meetings, 1 emergent, 2 joint meetings and 5 ordinary meetings of the Working Committee were held. The Standing Committees and the special committees met regularly to transact business alloted to them. The Provincial Medical Conference was held at Bishnupur on 15-16 March, and a subdivisional medical conference was held at Ranaghat on 29-6-58. Amongst its activities may be mentioned, the Convention of Colliery Medical Officers arranged at Asansol on 27-10-58 and the Special Committee meeting to consider the New Scheme of the Government of West Bengal. The provincial branch along with the Calcutta branch arranged a reception of 40 American doctors from the World Medical Association on tour.

BOMBAY WEST SUBURBAN BRANCH—A meeting of the managing committee of the branch was held on 1-5-59 and discussed the routine business of the branch.

A general meeting was held on 3-5-59. Dr. T. P. Vyas presided. Twenty doctors were present. A symposium on Peptic Ulcer was held. Dr. R. C. Desai spoke on Aetiopathology, Dr. K. N. Baria on Clinical Aspects, Dr. S. C. Sheth on Medical Treatment and Dr. M. K. Parikh on Surgical Treatment.

COIMBATORE DISTRICT BRANCH—A combined meeting of the branch and the Clinical Association of the Headquarters Hospital was held on 31-1-59. Ninety members were present. Dr. M. V. Krishnamoorthy of Headquarters Hospital presided. There were demonstrations of various cases by the medical officers of the hospital. The president in his speech stressed on the value of demonstration of cases and wished that more such combined meetings could be arranged.

CUTTACK BRANCH—A meeting of the branch was held on 25-4-59. Thirteen members were present. Dr. R. K. Parida spoke about Preventive Medicine in Paediatric Practice. The report of the discussion between the I.M.A. delegation and the Director of Health Services, was read to the members.

DAVANGERE BRANCH—A Clinical meeting was held on 26-4-59. Dr. H. K. Krishnaswamy presided. Dr. N. R. Narayan spoke on Prostatic Obstruction.

DHAKURIA BRANCH—A clinical meeting was held under the auspices of I.M.A. and A.I.M.L.A. on 21-4-59. Dr. S. Dutt, joint general secretary, I.M.A., presided. Dr. R. B. Choudhuri read a paper on Cholecystitis which was discussed by the members.

A general meeting was held on 27-4-59. Dr. A. C. Sen Gupta strongly criticised the State Government and the Corporation regarding negligence to local sanitation which was in a bad condition due to various factors.

DHARWAR BRANCH—A meeting of the branch was held on 5-10-58 with Dr. W. H. Gokhale in the chair. Nine members were present. Dr. H. V. Upadhye read a paper on Rare but Important Complaints.

A meeting was held on 16-11-58. Dr. K. M. Kale presided. Six members were present. Dr. A. K. Kale discussed 2 cases of Pyrexia. Dr. S. M. Kuradikeri presented a case report of a male patient of 50 years which was diagnosed after operation as Adenoma of Tail of Pancreas.

A farewell tea party was arranged on 9-1-59 in honour of Dr. D. V. Nadakarni, the former Civil Surgeon and member of the branch, now Director of Medical Services.

A meeting was held on 25-1-59. Seven members were present. Dr. H. V. Upadhye read a paper on Incomplete Approach.

The adjourned meeting was held on 1-3-59. Dr. K. M. Kale presided. Nine members were present. Dr. C. S. Kuradikeri read a case report on Encephalitis Lethargica.

The adjourned meeting was held on 19-4-59 with Dr. K. M. Kale in the chair. Seven members were present.

GHUGUDANGA BRANCH—A meeting of the branch was held on 26-4-59 with Dr. P. B. Ghosh in the chair. Twelve members were present. Regarding consultation charges in the chamber, the members agreed to give sympathetic consideration to the poor and deserving patients. The members decided to raise necessary fund for the Co-operative Medical Stores.

GULBARGA BRANCH—A monthly meeting of the branch was held on 26-4-59. Dr. L. R. Despande presided. Dr. Despande spoke on Mental Health. Fifteen members were present.

JALGAON BRANCH—A meeting of the branch was held on 24-4-59. The members condoled the death of Dr. K. W. Paradkar which occurred on 19-4-59. Late Dr. Paradkar was an active member of the branch. Suitable condolence resolution was passed.

KARIMNAGAR DISTRICT BRANCH—A clinical meeting of the branch was held on 25-4-59. Twenty-three doctors were present. Dr. S. R. Kache, the hony. secretary of the branch, was given a hearty send off on his transfer to Vijayawada. Dr. G. Surendra Mohan Rao, Health Officer, was elected hony. secretary. Dr. Mohd. Gulam Nabi, the District Medical Officer, demonstrated 3 cases of Hydatid Cyst of Liver, Vesical Calculus with Rectovesical Fistula and Pleura with Effusion consisting of Liver Abscess. Dr. Haslam read a case of Hydatid Cyst in Scapular Region and Dr. D. S. Mani discussed a case of Filariasis causing Nephritis and Congestive Heart Failure secondarily.

KRISHNA DISTRICT BRANCH—A meeting of the branch was held on 31-1-59. Dr. C. B. Ethirajulu presided. Dr. M. B. C. Reddy spoke on Urinary Tract Infection.

A meeting was held on 28-2-59. Dr. P. S. Chalapathi Rao presided. A symposium on Hypertension was held. Three of the doctors participated in it.

A meeting was held on 28-3-59. Dr. S. Hanumantha Rao presided. The members condoled the death of Sri Kala Venkatrao, Revenue Minister, Andhra Pradesh. Dr. M. A. Padmanabha Rao spoke on Infective Hepatitis.

A meeting was held on 26-4-59 to congratulate Dr. R. Atchutharamaiah, a member of the branch, on his election to the Andhra Pradesh Legislative Assembly. Dr. C. Sambasiva Rao of General Hospital, Guntur spoke on Cortisone Diseases and Treatment.

MEERUT BRANCH—A meeting was held on 3-3-59 when members condoled the death of Dr. H. R. Sabharwal, an old member of the branch, who expired on 3-3-59 at the age of 62.

A general meeting of the branch in observance of the World Health Day was held on 7-4-59. Dr. S. B. Vyas was in the chair. Twenty-one members were present. Dr. R. S. Batra spoke on Mental Illness and Mental Health in the World of Today

MONGHYR BRANCH—A meeting of the branch was held on 3-5-59. Dr. K. P. Mitra presided. Thirty-four members were present. The report of the Health Week Committee was adopted. After the routine business was over, Dr. B. Mukhopadhya of the Patna Medical College delivered a lecture on Fractures and Burns.

NAGPUR BRANCH—The annual report of the branch for the year 1957-58 shows that there were 121 members at the end of the year. Eight general body meetings and 5 executive body meetings were held during the year. Five doctors were selected for internship in foreign countries. Rs. 1,431/- were collected for the building fund, central office.

ORISSA STATE BRANCH—The annual meetings of the Working Committee and the Council of the State Branch were held on 29-3-59. Forty members were present. The members condoled the death of Dr. J. N. Das. The annual report of the branch for the previous year shows an improved financial position and an increase of membership from 285 to 382. Dr. S. N. Acharya, the retiring president spoke on Modern Trends of Family Planning, Medical Education in India and scientific basis of medical treatment. Office-bearers for 1958-59 were elected with Dr. D. R. N. Sahu as president, Dr. R. Mahanti as vice-president, Dr. G. B. Mohanty as hony. secretary. It was decided to pay the members of the Working Committee and Council of the State Branch while attending meetings 1st class railway fare or upper class bus fare as the case may be from 1-4-59. The government was requested to establish a medical college at Berhampore, after the college at Sambalpur is established.

PURI BRANCH—The branch was formed on 4-4-58 with 25 members. Since then every month, meetings were held, and clinical subjects discussed.

RANCHI BRANCH—A meeting of the branch was held on 22-4-59 to bid farewell to Dr. S. N. Sinha, ex-vice-president, transferred to the Darbhanga Medical College. Major Mullick, the president of the State Branch, was also present. Dr. Buxton exhibited some cases.

RATLAM BRANCH—An extraordinary meeting of the branch was held on 22-4-59. In place of office-bearers resigned, new office-bearers were elected with Dr. K. D. S. Rao as president, Dr. B. R. Pathak as vice-president, Dr. B. N. Mehta as hony. secretary, Dr. N. K. Pandya and Dr. D. J. Vyas as joint secretaries and Dr. Maghe as treasurer. The house declared the meeting held on 18-4-59 as invalid as there was no quorum.

REWA BRANCH—The World Health Day was celebrated on 7-4-59. A procession was arranged and posters showing the various health schemes of WHO were displayed. A Baby Show was held and a public meeting was also held in the evening. The health week was observed from 7-4-59. Public meetings were held on 8-4-59 at Raipur village. Lectures on mental development in children, preventive aspect of disease, vaccination, nutrition, village sanitation and B.C.G. campaign were given by different speakers.

SAHARANPUR BRANCH—The annual general meeting of the branch was held on 25-10-59. Office-bearers for 1958-59 were elected with Dr. D. P. Sharma as president, Dr. R. Bagchi as vice-president, Dr. A. S. Varma as hony. secretary, Dr. R. K. Sharma as joint secretary.

TRIPURA BRANCH—The branch was inactive for some time and was revived at a general meeting held at Agartala on 12-4-59. Dr. H. Banerjee and Dr. G. C. Chakravarty were unanimously elected as president and secretary respectively for the remaining period of the current year.

UTTAR PRADESH STATE BRANCH—A meeting of the branch was held on 7-4-59 and members condoled the sudden death of Dr. H. R. Sabbarwal on 3-3-59, an old member of the branch.

VIJAPUR BRANCH—A meeting of the branch was held on 5-4-59. Dr. S. Patel of Ahmedabad discussed Peritonitis and Intestinal Obstruction.

WEST GODAVARY BRANCH—The 15th annual conference of the branch was held on 23-4-59. Dr. V. V. G. Tilak presided. Dr. V. Govinda Nair, Retd. Professor of Venereology, K. G. Hospital, Vizagapatam, inaugurated the conference. Dr. Nair spoke on the need of membership drive, family planning, medical education and rural medical relief. The secretary read the report for 1958-59. Dr. V. Govinda Nair, in the Scientific Session, spoke on the Current Status of Syphilis and its Therapy. Office-bearers for 1959-60 were elected with Dr. D. Rajasekhara Rao as president, Dr. P. Rama Rao as vice-president, Dr. V. Venkata Rao as hony. general secretary, Dr. R. N. Raju, Dr. P. S. Kameswara Rao and Dr. D. Subramanyam as joint secretaries

PROCEDURE REGARDING SENDING OF BRANCH NOTES

The last announcement in the Journal asked the branches to send the notes directly to the Journal Office with a copy forwarded to the State Branch. A better procedure would however be that the branches submit their notes and news etc. to their respective State/Territorial Branches in triplicate. One copy each would be forwarded by the State/Territorial Branch to the Central Office and the Journal Office and the third copy would be retained by the State Branch.

It is requested that this procedure be followed hereafter, for smooth and efficient collaboration between the various offices concerned.

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A. P. MITTRA,
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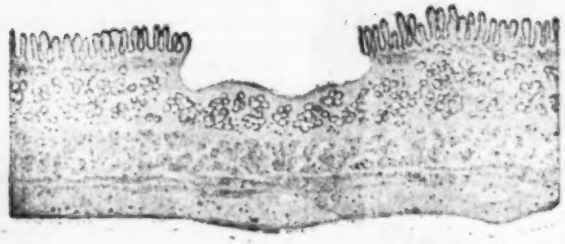

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Diphenhydramine Hydrochloride	20 mg.
Vitamin B_1	2 mg.
Vitamin B_2	2 mg.
Nicotinamide	25 mg.
Homatropine Methyl Bromide	1.25 mg.
Iodochlorohydroxyquinoline	125 mg.
Activated Charcoal	125 mg.

UNICHEM
QUALITY RELIABILITY

ESTROPROGYN

INJECTABLES

Estradiol Benzoate	**2.5 mg.**
Progesterone	**25 mg.**

per ml. of sesame oil with 1.5% Benzyl Alcohol.

TABLETS

Ethinyl Estradiol	**0.015 mg.**
Ethisterone	**15 mg.**
Aluminium Hydroxide	250 mg.
Magnesium Carb.	60 mg.

per tab.

in Amenorrhoea
Primary & Secondary

FOR PREGNANCY TEST,
HABITUAL ABORTIONS
AND
RELATIVE INFERTILITY.

UNICHEM LABORATORIES
BOMBAY 26.

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